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The OIL WEEKLY

OIL and GAS ENGINEERING

FOR OIL AND GAS PRODUCTION AND PIPE LINE DIVISIONS

THE WEEK'S NEWS INTERPRETED

EBRUARY 27, 1933
ne 68 Number 11

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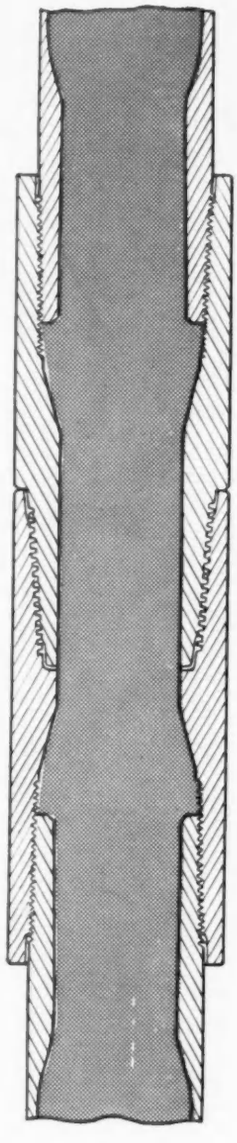

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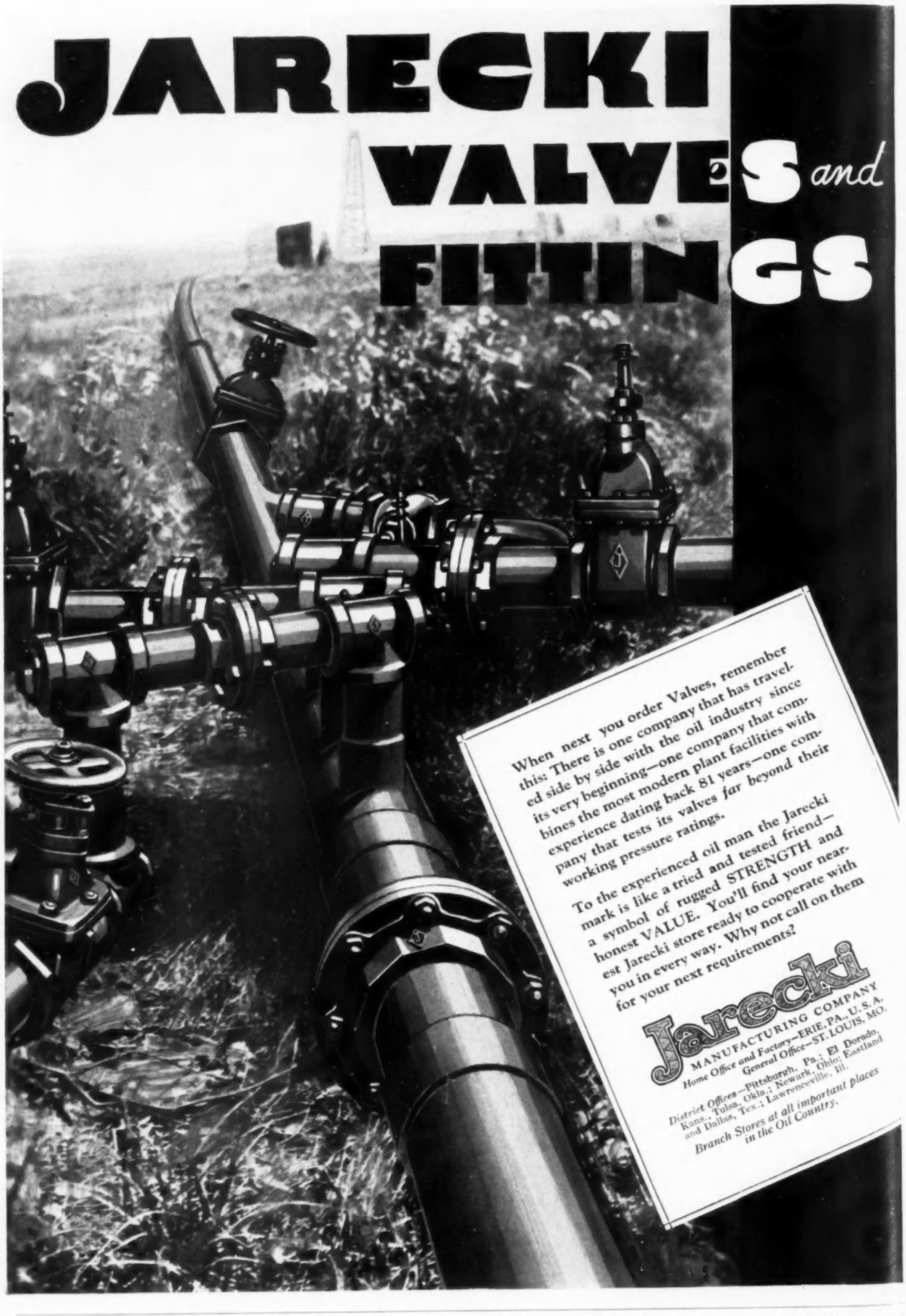

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Editor

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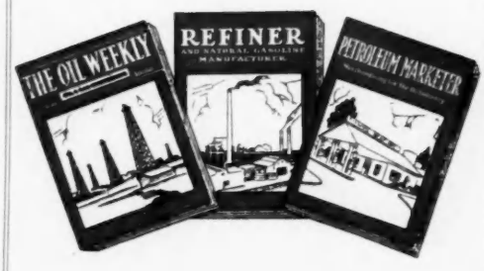

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THE OIL WEEKLY

FOR OIL AND GAS PRODUCTION AND
PIPE LINE DIVISIONS

ENGINEERING • NEWS • STATISTICS

The Changing Panorama

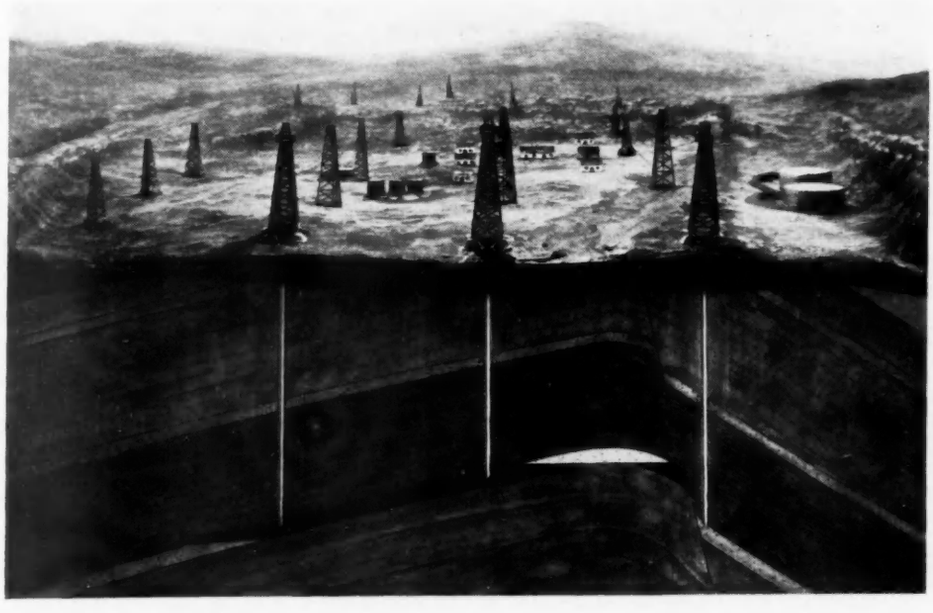
While the industry and the law makers of the state's most concerned are sitting up nights worrying about what to do with the present over-abundant supply, some of the best engineering talent gathered at New York and heard Valentin R. Garfias estimate that little more than half of the known supply of petroleum is still in the ground, and at current rates of consumption, there remains enough oil to last the world 20 years. The United States, biggest producer and biggest user, has less than its prorata share of what remains, although it has nearly half of what is in sight. Page 10.

An Excellent Way to Break the Market

We hear a lot about the bootlegger of crude, the "bootleg refiner" who insists on buying his crude beneath the posted price and the desire on the part of the major oil companies to keep a stable price in the interest of a sound industry.

The best way that we know of to break a market such as, for instance, the Oklahoma market, is for several of the major companies in the Oklahoma City pool to deliberately seek to buy, through "overnight brokers" large quantities of crude below the posted price.

THE OIL WEEKLY has said several times that it has no policy of "baiting" any company or group of companies, but THE OIL WEEKLY does not hold to the belief that because a major company is large it is entitled to do without criticism the very thing for which



Photograph of preliminary miniature model of the oil field diorama which will be one of the features of the Petroleum Industry's presentation at the 1933 "World's Fair" in Chicago. It will be animated showing wells being drilled in and will show why a "dry hole" may occur near prolific producers. Syncronized voice equipment will explain, among other things, the migratory nature of oil.

majors and independents alike condemn the smaller fellow.

We cannot blame a company for buying crude at as low a price as possible, from a standpoint of company economics, but in the name of fair play and common decency, let it do it above board and not attempt to retain a mantle of "protector of the industry" at the same time.

Not all of the majors in the Oklahoma City pool have been doing this. But some have.

Reports to American Petroleum Institute from refining companies controlling 91.6 per cent of the 3,856,300 barrel estimated daily potential refining capacity of the United States, indicate that 2,072,000 barrels of crude oil daily were run to the stills operated by those companies, and that they had in storage at refineries at the end of the week, 38,430,000 barrels of gasoline and 125,310,000 barrels of gas and fuel oil. Gasoline at bulk terminals amounted to 11,370,000 barrels and 1,211,000 barrels were in water borne transit in or between districts. Cracked gasoline production by companies owning 95.4 per cent of the potential charging capacity of all cracking units, averaged 379,000 barrels daily during the week. Page 31.

The Oil Man's Calendar

MARCH

14 *American Petroleum Institute Executive Committee, New York.*

15 *Annual Banquet, California Oil & Gas Association, Biltmore Hotel, Los Angeles.*

23-25 *American Association of Petroleum Geologists, Rice Hotel, Houston, Texas. Concurrent meetings; Society of Petroleum Geophysicists and Society of Economic Paleontologists and Mineralogists, both at Rice Hotel, Houston.*

26 *American Chemical Society, Washington, D. C.*

APRIL

3-6 *Western Petroleum Refiners' Association, Arlington Hotel, Hot Springs, Arkansas.*

7-8 *Southwest District, A. P. I. Division of Production, Rice Hotel, Houston, Texas.*

13-15 *Petroleum Industry Electrical Association, Tulsa, Oklahoma.*

17-23 *Oil Equipment and Engineering Exposition, Texas State Fair Grounds, Dallas, Texas.*

20-21 *National Petroleum Association, Cleveland Hotel, Cleveland, Ohio.*

MAY

15-17 *Natural Gasoline Association of America, Tulsa, Oklahoma.*

17-19 *American Petroleum Institute Mid-Year Meeting, Mayo Hotel, Tulsa, Oklahoma.*

SEPTEMBER

20-22 *National Petroleum Association, Thirty-first Annual Meeting, Traymore Hotel, Atlantic City, New Jersey.*

OCTOBER

24-26 *American Petroleum Institute, Fourteenth Annual Meeting, Chicago.*

About "Keeping Your Shirt On"

The publisher of THE OIL WEEKLY has just received the following letter from the head of one of the nation's largest oil companies:

"I have just returned from a little vacation and find your letter and editorial on my desk. It is very common-sense and constructive.

"In these days the most destructive influence that a business man is subjected to is the sort of mass hysteria which is very prevalent. I can think of no motto that would be better to put in every oil man's office than the caption of your editorial, "Keep Your Shirt On." My own feeling is that the pressure of necessity is paving a way for genuine cooperation, which is all that we need. The situation can be cured. My own guess is that things are being so rapidly precipitated that in a few weeks we will see a much better situation.

"About the oldest bromide in the world is that the 'night is darkest before the dawn,' but I think it fits in this case."

Engineering Progress

Uncertainties brought about by over-production and under-consumption of petroleum has not materially affected the advance of engineering progress, as a review of the past two years will show. Widening of belief in the theory that formation forces are of the greatest importance in production of oil has resulted in the application of the principles of movement of gases, study of which by the same means has been encouraged, to the end that natural flow of wells has been prolonged. At the same time, looking to the future when pumping depths will average far more than at present, arrangements already are being made for meeting those conditions when they arrive. Page 17.

Persia, it seems, is the only area in Asia or Europe that did not open up all possible in producing oil during the past months of the depression. Even "Buy British" propaganda at home did not serve to upset the well ordered plan of production of the Anglo-Persians, although they were able to get out a little more than the previous year. Figures on pressures, etc., are calculated to warm the hearts of those who believe prorated flow is the profitable way to produce oil. Page 11.

And then there is the Hobbs Field in New Mexico. Almost since discovery it has been rigidly prorated and with uniform agreement among the operators. Despite this control, some water has come in. Page 57.

East Texas Proration *Hearing Indicates* Changes in Allocation

Austin, Texas.—H. D. Wilde, Humble Oil & Refining Company engineer, offered a plan dividing total allowable to acre feet of sand and half to bottom hole pressure and acreage in hearing here of East Texas proration. He recommended an allowable of 325,000 barrels maximum, as this can be taken with pressure decline of .65 pounds per million barrels withdrawn, while a greater pressure drop will decrease flowing life of field.

J. G. Puterbaugh offered a plan allotting half on per-well basis and one sixth each to acreage, sand thickness and pressure. He declared this would satisfy the courts and permit small operators to survive. Puterbaugh favored maintaining the present plan, but is willing to make this concession.

Austin, Texas. — Testimony in the early part of the hearing, started before the Texas Railroad Commission February 23, indicated that the per well allowable, consideration of acreage per well and bottom hole pressure will serve as a basis for any new order that may be written for the East Texas oil field. Several other factors also have been promulgated in the testimony and some of these may have weight in determining the basis for future control of the field.

The first complete plan for East Texas proration was proposed by R. O. Garrett, engineer for Arkansas Fuel Oil Company. His calculations were based on a total output of 300,000 barrels per day. First he deducted 26,000 barrels to be distributed among wells on tracts of five acres or less and for marginal wells. He estimated that this would remove 4000 acres from the field, leaving 100,000 acres for consideration on the remainder of the plan. Marginal wells under his plan would have the full legal allowable of 40 barrels and flowing wells on small tracts would be placed at 20 barrels each.

The remainder of the allowable, 274,000 barrels daily, would be distributed among the 9000 remaining wells. Proration of these would be determined one-third on the per well basis and two thirds on the combined factors of acreage and bottom hole pressure. No well would be permitted to drain more than 15 acres.

Garrett insisted that his plan was equitable despite some variations that would exist in well output and that it offered a chance for control of the field under present conditions. The only other basis he could recommend was to eliminate the third of the allowable granted on the per well basis and base proration of the field on acreage and bottom hole pressure. He admitted that that this would be impossible since it would handicap the owners of small leases.

He presented a table to show estimated ultimate recovery under his plan as follows:

Size of Tract	Ultimate Recovery
1 well per acre	42,902 bbls. per acre
1 well to 5 acres	13,702 bbls. per acre
1 well to 7½ acres	11,269 bbls. per acre
1 well to 10 acres	10,052 bbls. per acre
1 well to 15 acres	8,835 bbls. per acre

This recovery estimate was based on output of 12 barrels per day per well. Although this plan would give the owners of small tracts higher recovery, since they would have daily recovery of 20 barrels per well against 12 for other classifications, he explained that these wells would not share in any increases in allowable for the field until daily output of other wells had reached the 20 barrel figure.

A statement by Lon A. Smith, commission chairman, opened the hearing. It was to the effect that the regulatory body looks with equal favor upon all corporations and individuals having interests in the field; that conditons with regard to petroleum have improved but that recovery must still be nourished by the aid of regulations of the commission.

H. J. Struth, petroleum economist of Houston, testified concerning indicated demand for Texas oil for April, May and June. He placed the figure at 839,000 barrels daily, an increase of 34,000 barrels per day over his estimate for the three months previous.

Proration Probe *Makes Slow Progress;* Approve Commission

Austin, Texas.—The investigation of the administration of proration laws under the Texas Railroad Commission, by the House Committee on Oil, Gas and Mining, has made comparatively little progress during the past week.

Several witnesses have been before the committee, giving their version of conditions in the East Texas field since proration has been in effect there following the installation of martial law.

Testimony of all witnesses seems to agree on a few essential questions.

1. That the present law is not sufficiently drastic as to penalties, and permits determined operators to violate proration with impunity when they have the assistance of competent legal advice.

2. An adequate system of accounting for the production and transportation of the oil is needed.

3. The same group of operators continues to violate the orders of the commission, regardless of legal action taken by the attorney general.

4. The administration of the orders by the commission has been inefficient due to lack of proper organization rather than to any desire on the part of the commissioners or employes to permit violations.

The majority of the testimony indicated that there was some improvement in conditions since the time Commissioner Thompson took charge of the field and concentrated the organization at Kilgore.

O. L. Goodson, switcher for Ortiz Oil Company, stated that his company produced excessively as a defensive action. He declared that at least one offset well, of whose ownership he was uncertain, had been overproducing for some time, and that the pressures on Ortiz wells had declined 70 pounds during this period. However, he explained that following the days when they opened up the Oritz wells and allowed them to produce at rates as high as 60 barrels per hour, the old flow channels in the sand were evidently reopened, and pressures increased to normal again.

Before taking any action, Goodson stated that he had reported the violation on the adjacent lease to the commission and his superiors, but that no results had been obtained.

M. C. Parrish, Jr., formerly in charge of oil tenders for the commission, declared that he had resigned from his

position because he could not see that his work was accomplishing anything.

He stated that oil was constantly leaving the field without tenders, particularly through pipe lines transporting oil to other states, and on tank-cars for coastwise shipment. Parrish said that several attorneys he had consulted advised him that control of these shipments was beyond the power of the Texas Railroad Commission, and could only be regulated by the Interstate Commerce Commission.

In many cases, he explained, tenders were presented to him for approval after the oil had left the field. In other cases where tender approval was withheld pending investigation into the legality of the oil, the production was moved by the time the investigators reached the ground.

Long insisted that this was an important point against the methods of the commission, and declared that they never did know how much oil was being taken from the field.

Parrish testified that few of the refineries filed tenders, and that many of the pipe lines made no reports to the commission. Some of these pipe lines were not on record in the Austin office of the commission, nor in the office of the Secretary of State, "but they were certainly active in the field," he concluded.

He said that the "daily situation report" prepared by the commission which was designed to show the status, daily, of all oil in the field, never reflected the true state of affairs.

Parrish said that he had thought of installation of an order governing the "spotting of tank cars," such as was issued by the commission last week, but that attorneys had informed him such an order was illegal, as it interfered with interstate commerce.

J. L. Inglish, another former employe handling tenders with Parrish, testified to similar conditions which existed during the time he was there. He believed that much of the excess production could be controlled by the installation of meters on the small pipe lines which carried oil to loading racks.

Inglish said that much of the inefficiency in the commission offices was due to the lack of concentration of information at a central point. He explained that when they questioned a tender, it was often necessary to send to Tyler for the information, and sometimes it was not available there.

When questioned by Long concerning reasons for the establishment of the main office of the commission at Tyler, Inglish said that he believed it was done because the phone service was good there, and they had access to the press.

(*Continued on page 34*)

Oklahoma Investigation *Shows Indications of* Dying Slow Death

Oklahoma City.—The sixth week of investigation of Oklahoma oil affairs by a senate committee came to a close with senators questioning executives of major companies concerning their field activities and transactions with Governor Murray's "Blue Valley Farmer." From testimony already introduced it appears that many of the major units were anxious or at least willing to purchase advertising space in the Blue Valley Farmer but in some instances were reluctant to furnish copy after space had been paid for.

John H. Kane, executive vice president of Phillips Petroleum Company of Bartlesville, expressed to the committee the opinion that anything might happen in the Oklahoma City pool in event that proration enforcement should break down. After discussing adverse court decisions Kane said, "Don't you feel the gravity of the situation? Don't you believe that proration may be broken down today or tomorrow? If you gentlemen will only give us a better oil and gas law we can operate with a degree of safety and no fear of the future." Phillips Petroleum Company, Kane said, having 28 per cent of the daily potential in the Oklahoma City pool, began a program of "getting ready to take care of ourselves." Recently the company has purchased a large number of storage tanks and has started work on an eight-inch oil line from the Oklahoma City pool to Thrall, Kansas, from which point it already has connections northward.

During the past week the committee has had considerable difficulty in securing a quorum, one session having been conducted by Senator Ross Rizley alone. Reports state that the press of legislative matters and illness have hindered progress of the investigation. Whether or not an attempt is being made to let the investigation die a slow death should be evident within the coming week, since the committee has yet a large number of leads and witnesses, some of whom should be able to give testimony of a sensational nature.

That it does not pay in Oklahoma to testify in a manner which would embarrass either the governor or his long list of relatives now on the state pay roll was evidenced during the week when Governor Murray asked both houses of the legislature to request deportation of Mark Kleeden on the ground that "he is an undesirable citizen." Kleeden is the man who assisted United States Attorney Hyde in securing important testimony through a dictaphone record when he (Kleeden) met Robert Galbreath and Ray C. Walker in a room in a local hotel.

That further pressure is being brought to bear on witnesses who have appeared before the committee was indicated by reported threats and telephone calls to Miss Vera Sellers, who gave what is considered the outstanding testimony of the investigation. Miss Sellers' home is now being guarded after she reported that a strange car had been driving around the block in which she lives and after she had received a telephone call asking her to come to a certain address with the threat that if she failed to appear "I'll come after you."

Small Chance of Texas Law Replacing Rail Commission

Austin, Texas.—The House Committee on State Affairs, by a vote of 10 to 5, reported favorably on the Holloway bill to create the "Natural Resource Commission" to take over the administration of oil and gas matters from the Texas Railroad Commission.

The proposed commission is appointive, calling for three members serving terms of six years. Appointees must be 35 years of age. This is the only qualification named.

It will be supported by a tax on crude oil of one fourth-cent per barrel, two and one half times the amount now given the railroad commission for its work. The income to the commission under the present tax of one tenth of a cent is slightly above $800 per day, and this would be increased to $2000.

In presenting his bill to the committee, Holloway, who is from Longview, declared that the present commission is over-burdened and that his bill is strictly a relief measure.

There was little opposition, except from a few members who objected to the establishment of another regulatory body to be supported by the people.

This latter argument will probably kill the measure when it is brought out on the floor. While some of the members are not in favor of decreasing the number of state employes or their salaries, they are heartily opposed, through a motive of economy, to the establishment of departments calling for more jobs.

A. I. M. E. *Concerned Over Supply* *Names* Stabilization Committee

New York—Stabilization was the keynote of the program of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers, whose annual meeting was held in New York last week. After comprehensive reviews of the economic and statistical position of the oil industry throughout the world, in the course of which it was brought out that the known petroleum reserves of the entire world do not exceed 20 years supply, it was decided to appoint a stabilization committee which will function during the critical year 1933 in the investigation and examination of the numerous and varied proposals which are being advanced for the regulation, control or stabilization of the industry. Earl Oliver, retiring chairman of the Petroleum Division, was named as chairman of this important new committee, whose membership will include W. S. Farish, president of Humble Oil & Refining Company; Henry L. Doherty, president of Cities Service Company, and E. L. DeGolyer, chairman of Amerada Corporation.

Legal talent was brought into the organization of this committee through the inclusion of Henry M. Bates, dean of Michigan Law School; Roscoe Pound, dean of Harvard Law School; J. Howard Marshall, assistant dean of Yale Law School, and Northcutt Ely, executive assistant to the Secretary of the Interior and chairman of the Advisory Committee of the Federal Oil Conservation Board. The scientific branches of the industry are represented by C. K. Leith, incoming president of the Geological Society of America and head of the Geological Department of the University of Wisconsin, and Dr. J. B. Umpleby of Norman, Oklahoma, in association with other technical men on the committee. Warner Clark of San Francisco, vice president of The California Company, and Roy E. Collom, Ponca City, Oklahoma, assistant to the president of Continental Oil Company, were chosen because of their records of success in the co-ordination of conflicting interests in Southwest Texas and in the unitization of Kettleman Hills field in California.

It would seem that the findings of the committee can be forecast in some degree from the opinion known to be held by its membership which embraces specialists in each step leading to the regulation and control of the oil industry, including unitization, proration, state compacts and legislation.

Earl Oliver, who led the discussion on stabilization, recommended that "an equitable and practicable standard of individual ownership rights should be determined and applied so that every owner shall participate in a just proportion of the reservoir content;" and suggested that "forms of collective self-control such as have been adopted in irrigation, drainage and mining districts might be found worthy of study."

"It is clear," he said, "that government has functions regarding the development and operation of oil pools that it must exercise, else confusion and ruin will result to the industry. No hesitation should be felt about calling on it to exercise those functions. But in prosecuting that appeal to government, great care should be exercised in determining what should be the function of government and on the other hand what should be the function of the property owners, both individually and collectively in the oil industry."

This precipitated a debate regarding governmental regulation, in which it was alleged by members not represented on the new committee that mistakes and failures on the part of statesmen, bureaucrats and politicians might be found upon examination to equal or exceed in gravity the better known errors of the oil industry's own leaders. Opinions expressed in debate were notable for their lack of unanimity.

The deliberations of the Petroleum Division were brought to a close with an address by J. Howard Marshall, who substituted for Dean Henry M. Bates of Michigan Law School, on "Legal Aspects of the Oil Industry Stabilization Program."

Wrather Selected *to Head Petroleum Division of* Engineering Institute

New York.—W. E. Wrather, consulting geologist of Dallas, Texas, was elected chairman of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers here last week. He succeeds Earl Oliver of Ponca City, Oklahoma. H. Norton Johnson, geologist, Los Angeles, was named associate chairman, and E. A. Stephenson, professor of petroleum engineering, Rollo School of Mines, Missouri, secretary-treasurer of the division.

W. E. WRATHER

Mail ballot of the 9000 members of the Institute resulted in the selection of Frederick M. Becket, vice president of Union Carbide and Carbon Corporation, New York, as president. Henry Krumb and Edgar Kickard, both of New York, were named vice presidents; Cadwallader Evans, Jr., Scranton, Pennsylvania; John M. Lovejoy, president Seaboard Oil Company, New York; Hugh Park, Cobalt, Ontario; Milnor Roberts, University of Washington, and Frank L. Sizer, San Francisco, were named directors. A. B. Parsons is secretary.

Other officers named for the Petroleum Division include:

Executive committee—W. E. Wrather, chairman; Hallan N. Marsh, production engineer, General Petroleum Corporation, Los Angeles; C. V. Millikan, petroleum engineer, Amerada Petroleum Corporation, Tulsa; Earl Oliver, Ponca City, Oklahoma; John R. Suman, director, Humble Oil & Refining Company, Houston.

Vice chairman, production engineering—H. D. Wilde, director of production research, Humble Oil & Refining Company, Houston, Texas.

Associate vice chairmen, production engineering—John F. Doge, professor of petroleum engineering, University of

Southern California; George L. Nye, production engineer, Tidal Oil Company, Maud, Oklahoma; Harry H. Power, petroleum engineer, Gypsy Oil Company, Tulsa, Oklahoma.

Vice chairman for production—Frank A. Herald, consulting geologist, Fort Worth, Texas.

Associate vice chairman for production—James Terry Duce, manager, foreign production operations, The Texas Company.

Vice chairman for economics—C. B. Mapes, petroleum technologist, Mid-Continent Oil & Gas Association, Tulsa.

Vice chairman for engineering research—K. B. Nowels, chief petroleum engineer, Forest Oil Company, Bradford, Pennsylvania.

Vice chairman for engineering education—C. M. Young, professor of mining engineering, University of Kansas, Lawrence, Kansas.

Vice chairman for refinery engineering—Walter Miller, vice president in charge of refining, Continental Oil Company, Ponca City, Oklahoma.

Vice chairman of stabilization committee—Earl Oliver, Poca City, Oklahoma.

Garfias' Estimate *of Reserves Shows About* Half Supply in Ground

New York.—Known oil reserves of the world are slightly more than the total production to date, and the United States has approximately half of its supply still to produce, according to Valentin R. Garfias of the Foreign Oil Department of Henry L. Doherty & Company. According to his calculation, approximately 61 per cent of the reserve is on the American Continent and 33 per cent in the Near East. These calculations were given in a paper before the Petroleum Section, American Institute of Mining and Metallurgical Engineers, in session here last week.

Full text of Mr. Garfias' paper follows:

It has been repeatedly questioned whether estimates of oil reserves are of any practical value, as the greater number of such calculations previously made have subsequently been proved to be grossly inaccurate. But even admitting partial justification for such statements, it must be evident that some idea, however approximate, of the available reserves of essential minerals is of vital importance in mapping their development and the future trend of the related industries, particularly if it is kept constantly in mind that these estimates—which are never intended as a final word—must be continually subject to revision in accordance with the changes in their component factors. The value of these estimates, therefore, hinges on the clear understanding that they can only apply within the limited time when the controlling factors remain unchanged.

It should be understood, however, that while estimates of *possible* and *probable* oil deposits are as a rule but idle conjectures, appraisals of *proven* oil reserves can undoubtedly be made with an ever-increasing degree of accuracy. And it is with this in mind that in the present study the endeavor has been to estimate only the world's *proven oil reserves*—the oil that yet remains underground in the producing fields—and their logical extensions, and to leave out of consideration the questionable volume of the *probable* and *possible* oil reserves.

In Table 1 the countries at present producing oil in commercial quantities are listed in the order of the magnitude of their proven reserves.

As shown in the table, the world's proven oil reserves are estimated at over 24 billion barrels, while the total porduction to the end of 1932 aggregates nearly 23 billions. Past production represents, therefore, 48 per cent, and proven reserves approximately 52 per cent of the total. About 61 per cent of the reserves are located in the American continent and close to 33 per cent in the Near East fields of Russia, Iraq and Persia.

It is interesting to note that the proven reserves in the important producing regions almost equal if not exceed their production to date. The Mexican fields are a remarkable exception in this respect since they produced over 1½ billion barrels and have proven reserves estimated at only 300 million barrels.

The United States with proven reserves estimated at 12 billion barrels, or 48 per cent of the world's total, and with 65 per cent of past production easily outranks other countries. But these reserves, important as they are, when compared to the probable future consumption in the United States are far from impressive. In fact, our *proven* reserves will prove inadequate to meet demands for more than a few years unless there should be a pronounced falling off in demand.

On the contrary, the very limited oil consumption in Persia, Venezuela, Rumania, Colombia and Iraq will necessitate the marketing outside these countries of the bulk of their reserves, which aggregate 7.6 billion barrels. As a result, and although the Persian and Colombian fields are now practically under unit control, and their output may be to some extent regulated in line with demands, those in Venezuela, Iraq and Rumania will continue to be, in varying degrees, potential sources of instability in the world's oil trade.

Russia, the second ranking country with 3 billion barrels of reserves and a past production of nearly equal amount, representing about 12 per cent of the respective totals, has been of late a disturbing factor to the oil industry. This country which now markets petroleum products with little regard to the relations between cost and selling price should increase domestic demand, as internal stabilization is accomplished, and thereby appreciably reduce its exportable surplus.

One of the most important and as yet little known regions as regards future production is Iraq, the proven reserves of which have been tentatively estimated at 2½ billion barrels. The Iraq field, in which various governments are indirectly interested, may play a very vital part in the industry with the termination of the pipe lines from the fields to the Mediterranean late in 1934 or early in 1935.

In a general way, according to the information now available, it may also be stated that the world's proven oil reserves are far from impressive when compared to the magnitude of the reserves of other essential products and to the probable future trend of consumption. The estimated proven reserves are equivalent to 20-odd years' supply at the present rate of consumption but as all the reserves can not be *produced* within that time, it is obvious that additional supplies will have to be discovered in the next few years to assure a more permanent supply in line with consumption.

Estimated Proven Oil Reserves
(In Millions of Barrels)

	Proven Reserves	Total Production to Dec. 31, 1932	Production in 1932	Years of Past Production
United States	12,000	14,787	784	74
Russia	3,000	2,883	154	72
Iraq	2,500	5	1	6
Persia	2,200	482	45	20
Venezuela	2,000	761	121	16
Dutch E. Indies	1,000	547	38	40
Rumania	500	472	48	76
Colombia	400	121	17	11
Mexico	300	1,665	32	32
India	100	224	8.2	44
Peru	100	141	10	37
Argentina	100	95	13	25
Trinidad	90	84	10	24
Poland	50	231	4	59
Japan	40	65	2	58
Sarawak	30	52	2.3	20
Canada	10	33	1	71
Egypt	10	25	1.7	22
Germany	10	25	1.8	53
Ecuador	10	7	1.7	16
France	5	7	0.5	15
Others	10	5	0.8	
	24,465	22,717	1,297	

Engineers' Discussion *Details* *Conditions in* Europe and Asia

New York.—Review of developments in Europe and Asia by authorities contributing to the program of the Petroleum Division of the American Institute of Mining and Metallurgical engineers confirms published reports (THE OIL WEEKLY, *January 30, 1933, Page 13*) that output of petroleum in those areas during 1932 was limited only by ability of the several countries to produce. An exception, discussed by Sir John Cadman, is Persia, where the policy of scientific recovery has continued, resulting, however, in an increase of output. Russia fell below the previous year because its man power was not equal to attaining the task set. Roumania was able to increase output by 6.8 per cent, but its current relation to world markets has been modified by the Paris conference.

Operations in India and Burma have been obscured by secrecy on the part of operators, but an increased output resulted during the year. It is believed that these areas have been practically covered by exploratory work, but the secrecy above mentioned tends to obscure what to expect of the future.

Poland had no new discoveries during the year and its output dropped. In Germany the effort to increase output has not been successful. Italy was able to increase its small output, and in France the effort principally was in the erection of refining plants.

Below are excerpts from papers reviewing the several countries at the New York meeting:

Roumania

"THE production of petroleum in Roumania in 1932 totaled 52,560,000 barrels, an increase of 6.8 per cent over 1931. The average daily production rose from 123,000 barrels at the beginning of the year to 173,000 barrels at the end of the year, the production in the Gura-Ocnitzei field rising from 38,800 to 80,700 barrels per day. This increase was due to competitive development during which time the percentage of total production of the various operating companies remained practically unchanged.

"Chief producers were: Concordia, 30.3 per cent; Unirea, 21.6; Romana-Americana, 13.5; Steaua Romana, 8.3.

"Boldesti, where production in the previous year was practically doubled, would have produced far greater quantities were it not for the fact that both Astra Romana (Shell) and Romana-Americana (Standard) curtailed drilling operations. Of the total daily production of 21,800 barrels a day, Astra Romana, Steana Romana and Romana-Americana produced, respectively, 67, 25, and eight per cent.

"The Moreni field showed a sudden drop in production from the preceding year, due primarily to reduced drilling activities. Its production of only 21,000 barrels a day removed it from first position for the first time in many years.

"All the other fields showed a decrease in production, except Ochiuri, three miles west of Gura-Ocnitzei, and Ceptura, 12 miles east of Boldesti.

The Paris Conference

"Two attempts have been made by a number of American, Dutch and English oil companies, within the past year, to establish an export quota for Russia and Rumania in order to stabilize the European market, which has been demoralized by the increasing production of these two countries. As the diplomatic relationship between Russia and Rumania is strained, owing to the Bessarabian dispute, two separate conferences had to be held. The conference with the Russians was held last May in New York, and failed to bring results. Following this, a conference was held in Paris with the Rumanians, who eventually agreed to limit production to 1850 carloads (133,200 barrels) a day, or approximately 77 per cent of the total daily production (173,000 barrels) at the time the agreement was signed."

IONEL I. GARDESCU, *Geologist and Petroleum Engineer, University of Pittsburgh.*

Germany

"THE production of petroleum in Germany during 1932 totaled about 1,635,000 barrels, a slight decline from the 1,718,000 barrels produced in 1931. This decline . . . occurred chiefly in the Volkenroda (Thuringia) field.

"More than 10 new salt domes with depths up to 3280 feet or more are reported to have been found during 1932 by seismic and gravitational methods in the western part of the North German Plain. Altogether more than 25 geophysically discovered salt dome prospects are known in this region and of these two have been proved by drilling.

"During the year extensive torsion balance surveys were made by various companies in the Northern Plains to discover new salt domes and to outline known plugs. In the Danube Basin torsion balance work has been done to discover anticlinal folds. Magnetic surveys were made in the Thuringia and Danube Basins to locate a regional features of the basement rocks. Electrical investigations have been carried out in the salt dome and Thuringian territory to solve local problems.

"During 1932 about 15 wildcat wells were completed in Germany," by such companies as Royal Dutch-Shell, North European Oil Corporation, Elwerath, Ebag, Gewerkschaft Evertsau (Cities Service), and F. J. G. Vingerhoets of Brussells.

"The above mentioned wells were drilled to explore the flanks of salt plugs for Mesozoic oil sands, but in addition three interesting tests were under way to secure production from the Zechstein (Permian) dolomite, which is the productive horizon in the Volkenroda (Thuringia) field. All three are located in regions with ample surface geological control. The Elm-Erdol-Gesellschaft which is controlled by British Borneo Petroleum Company, Ltd., (Shell) is drilling on the Elm anticline about 4.3 miles east of the City of Braunschweig.

"A syndicate composed of the Winershall Potash Corporation, the Preussag, and the Gewerkschaft Elwerath is drilling a rotary well, about 3.1 miles southwest of the Volkenroda oil field. The third test for Zechstein oil is a recently started rotary well of the Preussag, on the well-developed Hakel anticline, about 11 miles west of Stassfurt, north of the Harz Mountains.

"The British Burmah Petroleum Company, Ltd., is said to be interested in wildcat well drilling east of the Oberg field."

WALTER KAUENHOWEN, *Geologist and Geophysicist, Hamburg, Germany.*

France, Italy and Poland

"NO wildcat operations are recorded from France during the past year, and no new discoveries have been made. In northern Africa, in Morocco, some prospecting continued in the Gharb and Tselfat regions. Only very small production or shows were found. At the close of the year one cable-tool well (depth 400 meters) was drilling in the Tselfat district, and one rotary well in the Gharb. In Tunisia one well was drilling at Sloughia.

"Refinery building has been active under the new petroleum law, no less than six plants now being under construction.

"At Pechelbronn, it is estimated 130 wells were drilled, of which 73 wells, or 56 per cent, were productive. Total

A typical well in Poland. This country's output declined in 1932

drilling was 45,000 m. One new Jurassic horizon was discovered. In the mining area approximately 17,500 m. of new gallery were driven. Production at Pechelbronn for the first nine months was as follows: From wells, 233,013 barrels; from mines, 164,815 barrels—a total estimated production for the year of 532,000 barrels. Production at Gabian was 3780 barrels for the year.

"In Algeria production from Tliouanet was small, being estimated at 6510 barrels. This production is from Helvetian sands (Miocene) around a salt plug.

Italy

"Production for the year was 211,500 barrels, an increase of 62 per cent over that of last year. Drilling to the extent of 97,000 feet was done mainly by the A. G. I. P., the government company in the Province of Emilia. More locations are being tested in this area, where geophysical results have shown indications of buried uplifts. Oil has been encountered on two of these structures, at Fontevivo and Podenzano, but the wells have given trouble with salt water. The chief producer is the Societa Petrolifera Italiana at Salsomaggiore and Valezza. The production is from sand lenses at relatively shallow depths.

"New concessions of 2000 hectares were granted at several points in the Po Valley, and geophysical work is being carried on. The A. G. I. P. is working on a five-year program of exploration to test new areas.

Poland

"There was a decline of 14 per cent in the production of Poland—to 4,116,000 barrels. This was due chiefly to decline in drilling activity. No new discoveries were made during the year. In most of the old fields the production is now stabilized and some of the fields, particularly Boryslaw, have been tested to a depth of over 2000 m. The future of Polish production is locked up in the question of the discovery of new producing areas, and in this connection it is interesting to note that the Pionier Company has been formed and has drilled four exploratory wells, two of which were situated in the sub-Carpathian depression north of the folded and overthrust zone. This company is a joint exploratory organization, in which all the large oil companies and the Polish government participate."

W. P. HAYNES,
Paris, France.

Russia

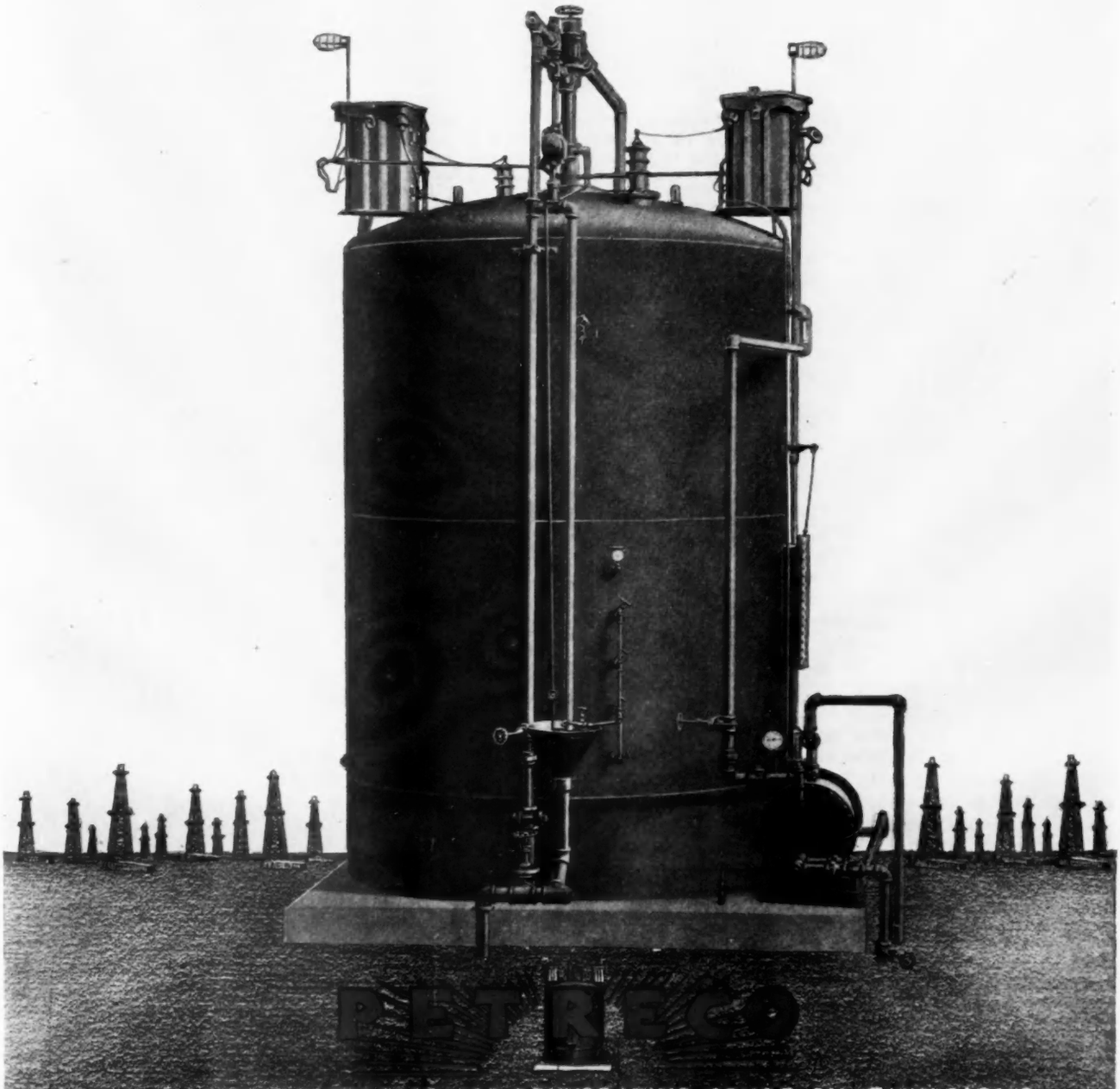
"RUSSIA'S first (Five Year Plan) has ended. Technically it did not succeed but practically it has been a great achievement in the petroleum industry. Out of the chaos of revolution and civil war Russia has developed her oil industry to second place in the world's production. Her 1932 production of crude oil is estimated at 150,000,000 barrels and refined products at 145,000,000 barrels.

"Russian oil fields have been easy to develop and operate. They lie advantageously to transportation for foreign markets. The chief disadvantages have been a lack of credit and technical cooperation, but the former is being overcome by the sacrifice of the people. They go without the comforts of life that all salable articles may be exported for the imports of modern machinery. Modern machinery is fast replacing the obsolete and worn-out equipment.

"Technical cooperation has been difficult because it has been necessary to train thousands of adults to do technical and mechanical work. Great quantities of pipe, tools and electrical equipment were necessary for the rapidly developing fields and refineries. The supplies have been inadequate and the quality poor. This lack of equipment, along with the untrained technical supervision, has been the cause of the proposed quota falling short.

"The new five-year plan (1933-1937) includes a strenuous program for drilling, production and refining. The plan

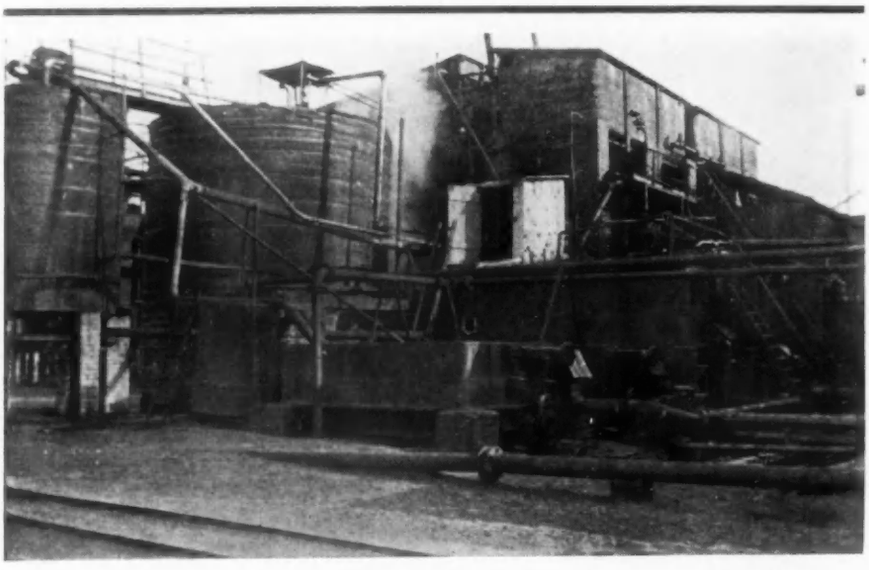
Efficient and Dependable



THE ELECTRICAL PROCESS FOR DEHYDRATING CRUDE OIL EMULSIONS

(Fully Covered by Process and Apparatus Patents)

PETROLEUM RECTIFYING COMPANY OF CALIFORNIA. LOS ANGELES. BRANCH: HOUSTON, TEXAS



A view of the plant at Wietze, province of Hannover, Germany, used in "mining" the oil sand, which is brought to the surface for removal of the oil by washing with steam and hot water. The sand is lifted to the surface through two 750-foot shafts, and afterward returned into the mines through drill holes.

proposes to produce 484,000,000 barrels in 1937. The increase in production each year will become proportionately less. The proven and easily accessible fields now in operation will soon decline and new fields must be developed.

"Russia has 3200 km. (2000 miles) of pipe line which is to be extended to 15,000 km. (9375 miles) by 1937.

"One of the most outstanding accomplishments in Russia's oil program has been its improvement in refining methods and the building of many modern refineries. Russia has constructed several modern cracking units, both of American and Soviet design, during the past few years. The old inefficient stills are rapidly being replaced by modern pipe stills. Redistillation of fractions has been supplanted by large fractionating towers. Bright stocks and lubricating oils are being made with the new American installations. Export oil products are made to more accurate specifications. The manufacture of by-products of distillation and the treating of oils are increasing for both home consumption and foreign markets.

"In the producing fields steam is being replaced with electricity, rotary drilling is made standard, bailing has become obsolete, air and gas-lifts have increased, the turbo-drill is receiving deserved recognition, the old fields are being drilled deeper and all refining methods are being made modern.

"The second five-year plan is as ambitious as the one just past and the central power is as optimistic as ever. The original high quotas have steadily decreased as operations failed to meet the demands; yet by its system Russia has pushed forward to second place among the producing nations of the world and is a real competitor to every producing nation."

ROBERT C. BECKSTROM, *Consulting Petroleum Engineer, formerly adviser to Azneft Oil Trust, Baku, U. S. S. R.*

Iraq

"FROM a broader viewpoint, interest in Iraq at present is centered in the construction of the pipe line from Kirkuk to the Mediterranean Sea by Mediterranean Pipe Line Company, a subsidiary of Iraq Petroleum Company, and in the concession recently granted British Oil Development Company. The pipe line has been described adequately in several publications, therefore mention will be made only of such features as will facilitate an understanding of the progress made in its construction. From the oil fields, a double line extends southwesterly 150 miles to the third pumping station, which is about one mile from the west bank of the Euphrates. Approximately six miles west of this point, the line is divided into the southern section, traversing territory under British mandate 467 miles to the Mediterranean port of Haifa, and the northern section, mainly within French Syria, which terminates at Tripoli, 381 miles from the point of bifurcation.

"Toward the close of 1932, about 30 miles of pipe had been laid and pipe strung over about 100 miles of the double line between Kirkuk and Haditha. The crossings under the Tigris and Euphrates rivers were completed during the late summer when the waters were low. It is expected that the first section will be completed within six months. Two other crews are employed, one in Syria working out of Homs on the northern section of the line and the other in Transjordania working out of Mafraq on the southern section. Homs and Mafraq, connected by rail with Mediterranean ports, are being provided with workshops, sidings, and stores, and will serve as railheads respectively for the northern and southern sections.

"International interest is centered also in the agreement of April 20, 1932, between the Government of Iraq and British Oil Development Company, whereby the company was granted exclusive oil and gas rights for 75 years in the area of approximately 200 square miles west of the Tigris River and north of the thirty-third parallel of latitude. Participation in the company is divided among four national groups, as follows: British, 51 per cent; French, 12 per cent; German, 12 per cent; and Italian, 25 per cent, the latter being held by the semi-official Azienda Generale Italiana Petroli.

"The agreement stipulates that the company shall start drilling within 18 months of the date of the convention, and shall work continuously with a minimum of three rigs, the minimum number to be increased to nine as soon as oil shall have been struck.

"Recent reports from Iraq state that geologists are making a reconnaisance of the northern districts within the area of the company's concession."

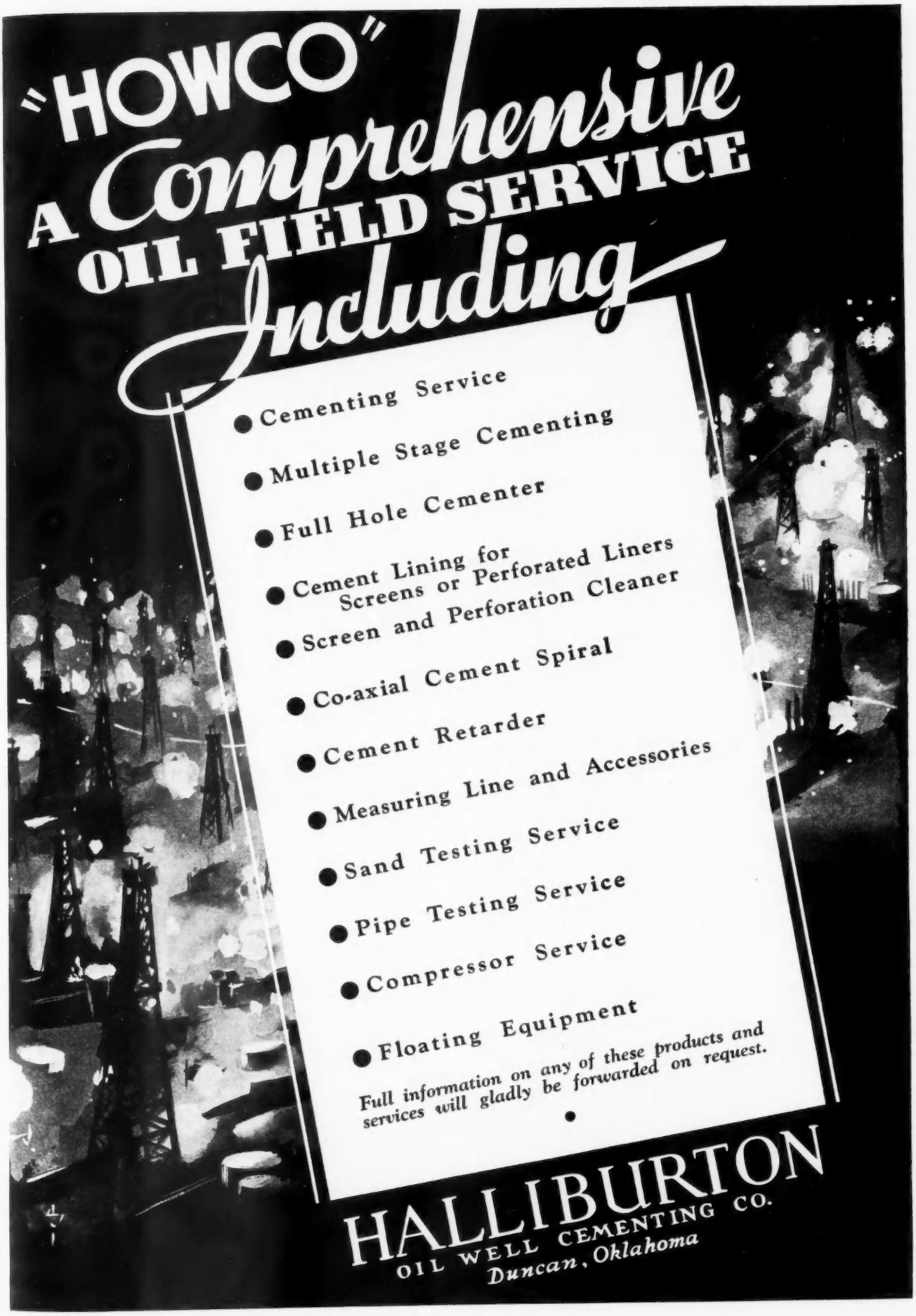
E. B. SWANSON, *Chief Economist, Petroleum Economics Division, U. S. Bureau of Mines, Washington, D. C.*

India and Burma

"IT is actually peculiarly difficult to give an account of recent developments in the oil fields of the Indian Empire. . . . the companies tend to preserve a policy of extreme secrecy . . . In the country itself the geologists preserve the utmost secrecy, and at times quite a system of espionage is developed. Of recent years there has been a slight tendency towards the pooling of experience, but actually the Indian Empire, particularly of course Burma, where there is a great deal of competitive drilling, affords a very interesting example of these methods carried to extremes."

Production in India, Burma, and Assam is estimated at 8,434,050 barrels during 1932.

"Burma has been very thoroughly explored by geologists and tested by trial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wells. There is very little possibility of the discovery of any large new fields, in fact the discovery of any field at all becomes increasingly doubtful. . . Conservation of reserves has been the keynote, not only of the companies operating in Burma, but of government regulations designed to control the fields. The main lines of development in 1930-32 have been the increasing use of electricity (the two main fields are almost entirely electrified), the paying of greater attention to recovery of oil from gas, and the study of gas pressures as affecting yields. There has been a general move in favor of repressuring with gas as opposed to vacuum and suction practice. . . .

" . . . Conditions (in the Attock field, at Khaur, in the Punjab) differ from the other parts of the Indian Empire in that the oil is believed to have migrated into its present position in the Younger Murree rocks from the Nummulitic Beds of Eocene age which lie below and the field has in some respects been the despair of geologists. Well after well has come in with a big production and then rapidly declined. . . High pressures have again and again prevented the deep tests being carried out which the (Attock Oil) Company has in mind. . . .

In conclusion, "There is very little possibility of the discovery of new fields or the extension of existing fields in the Indian Empire unless some of the structures which are being tested, or may be tested, in Baluchistan exceed expectations. But with the careful exploitation now being carried on undoubtedly the present production, or something near the present production, of the Indian Empire may be maintained for a very long time."

L. Dudley Stamp,
University of London.

Persia

"SINCE my previous review of the Persian fields, presented in 1929, considerable progress has been made.

"The main feature of drilling development has been the delimitation of the Haft Kel field and its extensions. Although the limits have not yet been reached, a productive area of about 40 square miles has already been proved and it is now certain that the field will be of the same order of importance as the Masjid-i-Sulaiman field. Production to main pipe line from Haft Kel was begun in November, 1929, and to date about 4,500,000 tons have been produced. Normal production has continued from the Masjid-i-Sulaiman and Naft Khaneh fields.

"The search for oil in horizons below the main producing limestone is perhaps the most interesting and important exploratory drilling work in progress. Promising results have been obtained in the first well deepened in the Masjid-i-Sulaiman field with this objective, and the exploration of these lower formations is being continued.

"In this connection an allied program of geochemical research work on the nature of the oils and oil-bearing rocks of different horizons is at present being undertaken.

"Since the Haft Kel field was brought into production in 1929, production from Masjid-i-Sulaiman has been reduced in order to equalize to some extent the producing lives of the two fields."

Production for the last year was as follows:

Masjid-i-Sulaiman approximately 31,500,000 barrels[1].

Haft Kel approximately 14,000,000 barrels[2].

"As at Masjid-i-Sulaiman, the producing horizon (at Haft Kel) is the Asmari limestone and the productivity is high. Initial well productions under standard test conditions average 20,000 barrels per day, and in certain wells productions as high as 40,000 barrels per day have been obtained against back-pressures exceeding 600 pounds per square inch. In routine operation well productions are restricted for reservoir control purposes. The closed-in pressures of oil wells average about 700 pounds per square inch. Gas-well pressures are of the order of 1500 pounds per square inch. Producing gas: oil ratios are of the order of 480 cubic feet per barrel.

"No well which was producing in Persia in February, 1929, has since ceased natural flow on account of declining pressure or of dimished drainage from the reservoir rock. No well has been taken off production on account of edge-water encroachment, nor indeed has edge water been produced in any production wells. A certain number of wells have gone to gas and been closed in, but this is strictly in accordance with our system of operation: the dates on which such wells have gone to gas have corresponded closely with estimates existing four years ago, and replacement wells have, where necessary, been methodically completed in advance of these dates.

"The pressure in the gas dome of the Masjid-i-Sulaiman field has only dropped five pounds per square inch—approximately 1.0 per cent—during the past four years, although a production of nearly 20,000,000 tons (approximately 140,000,000 barrels) has been drawn from the field during that period.

"This desirable state of affairs, though partly the result of favorable reservoir conditions, is largely attributable to the policy of exercising scientific control of those conditions—a policy which has now been pursued in Persia for many years."

Sir John Cadman, *Chairman, Anglo-Persian Oil Company, Ltd., London.*

[1]"These figures represent the crude oil and products piped to the coast, but exclude products returned to the reservoir. In this latter connection a topping plant of 6200 tons per day rated capacity has been installed in the Masjid-i-Sulaiman field and is in intermittent operation in accordance with the fluctuations of market requirements."

[2]"This production has been drawn from a small section of the field."

Dutch East Indies

(From figures submitted to the Institute by Shell and Standard companies operating in the Dutch East Indies).

"Exploitation drilling in the majority of the larger fields was suspended, and existing production was kept within predetermined limits by beaning. Most of the smaller fields were shut down entirely."

Production was as follows, during the year 1932:

	Barrels
North Sumatra	4,226,935
South Sumatra	13,956,157
Java	3,845,568
Dutch Borneo—	
Main Island	9,406,733
Island of Tarakan	6,579,184
Ceram	326,207
Sarawak	2,739,650
Brunei	1,322,725
Total	42,403,159

Rush of Empty Tank Cars To East Texas Embargoed

Kilgore, Texas. — Concentration of tank cars on railroad sidings within and conveniently close to the East Texas oil field by producers and shippers in expectation that proration of the field's output may be disturbed was largely responsible for the T. & P. and I.-G.N. railroads imposing a partial embargo on empty tank cars moving into the area. The embargo order followed shortly after the Texas Railroad Commission attempted to impose rigid orders governing the loading of crude oil for rail shipment in its efforts to restrict over-production of leases. The railroads obtained relief on February 18 from the commission's restrictions on interstate and coastwise consignments through a federal court injunction, but did not remove the ban on empty cars.

The embargo order was deemed necessary to forestall a return of congestion experienced by the railroads in August, 1931, when empty tank cars filled all available sidings, and interfered with passenger train service through the field.

Present Tendencies in Production Practice

RAYMOND M. CARR
Sinclair Prairie Oil Company

DEPTHS from which oil is produced continues to increase and economic conditions require that costs of investigations be limited while low prices for the product demand that producing methods be carefully considered to the end that lifting costs be brought to the absolute minimum. This combination of circumstances during the past two years has brought about notable progress. One development of importance is that importance of formation gas energy in oil recovery has been stressed to almost universal realization. Open flow has given way to restriction of flow for the dual purpose of holding production within limits of demand and also of conserving energy. Gas lift methods are being extended to application to lift principles which reduces the working parts in pumping wells to only one. And in addition, conventional pumping equipment is being overhauled and redesigned with a promise of greater efficiency.

This paper was prepared for presentation before the Mid-Continent District, A. P. I. Division of Production, at Wichita, Kansas, February 17-18, 1933.

ABOUT 10 years ago the rotary method of drilling appeared in Mid-Continent fields and within a few years wells were being drilled to producing horizons that previously had been considered only as speculative possibilities. The oil producer was suddenly confronted with the fact that drilling methods had outstripped producing methods. Orthodox production methods which had served the producer since the inception of the industry and which, doubtless, will continue to serve him for many years to some in the shallower fields, had in the beginning the extreme advantage of simplicity. For shallow fields, the sucker rod, jack, shackle line and power solves the problem conveniently and economically. If an engineer should attempt to calculate the overall efficiency of an early installation of this type, the results could scarcely be expressed without resorting to the use of negative figures, but from the viewpoint of a production man, the outfit gets the job done day after day, and after all, that is the yardstick by which its true efficiency must be judged.

Faced by the necessity of lifting oil from deeper and deeper wells, producers and manufacturers alike began developing equipment capable of performing the task. For the most part, the trend of development followed the lines of least resistance and consisted of heavier prime movers, larger rig fronts, improved sucker rods and the like. By the time Seminole was discovered the typical beam pumping installation had become a fairly complex plant, equipped with a gas engine, air starter, countershaft, counterbalance and as many accessories in the form of rod hangers, beam hangers and patented stuffing boxes, as the individual experience or fancy of that particular operator might prefer. Here and there however, efforts were seen of a tendency to leave the beaten trail and several innovations have appeared in producing methods during the past four or five years. Some of these are new in principle, others are merely adaptations of old principles. It is the purpose of this paper to briefly review some of these methods and devices and by so grouping them, to point out the trend along which future producing practices appear likely to develop. We do not propose to discuss mechanical or constructional details except where necessary for clearness.

CLASSIFICATION OF PRODUCING METHODS

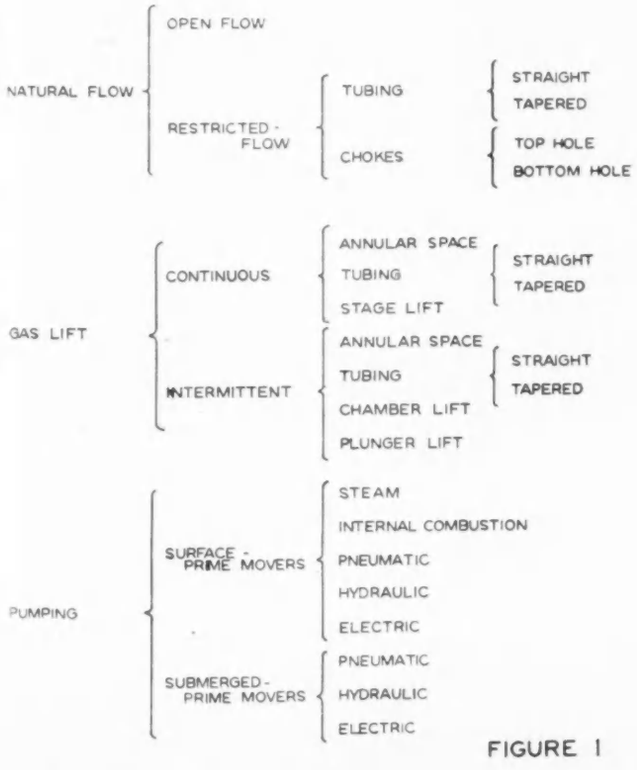

FIGURE 1

The following classification, Figure 1, has been made in order to facilitate discussion and to give a full perspective view of the producing methods which are available to the industry at this time. They are arranged in the same sequence in which they are usually employed.

Natural Flow Methods

Open Flow

In the past, a great majority of wells, in the flush stages of their lives, were produced by open flow. It was only a coincidence if this method untilized the maximum energy of the gas. As the functions of natural gas in a reservoir were more fully understood however, and its true value became apparent, operators reversed their early conceptions that gas was more or less an evil by-product. Today, we find a conviction that oil recovery is in reality the by-product of gas energy. This reversal of ideas has lead to the adoption of restricted flow as

a means of obtaining better energy control and increased ultimate yield.

Restricted Flow

Tubing and top hole chokes have, until recently, been the most usual methods of restricting flow. Early in the industry it was discovered that when wells ceased to flow through casing, it was possible to prolong natural flow by running tubing. Strictly speaking, this amounted to a velocity control rather than a back pressure control, because the object was to confine the uprising gas into a smaller flow string so that its velocity would be great enough to prevent slippage. As a general practice, tubing was not run until the reservoir pressure was greatly depleted. Any improvement in gas-oil ratios

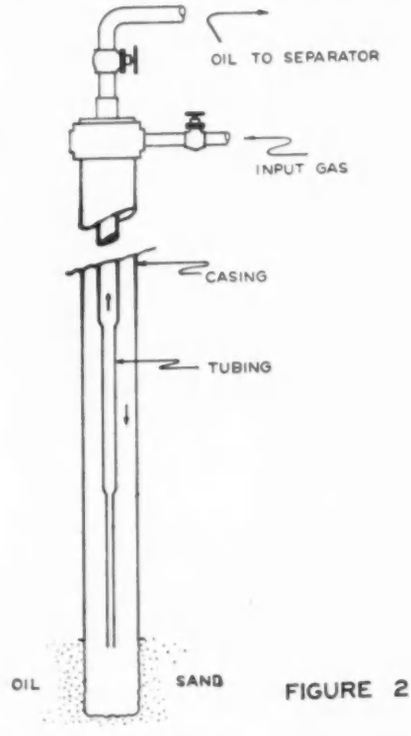

FIGURE 2

passed unnoticed in the majority of cases, as the primary consideration was to keep the well flowing.

Top hole chokes have, of course, been in use since the first wells were equipped for flowing. Any surface valve, bean or other device used for restricting free flow of fluid from a well can be classed as a top hole choke. Formerly, these were employed solely for controlling the rate of production, as a brake may be used in slowing down an automobile. Gradually it was learned that in some wells a material decrease in gas-oil ratios could be obtained by restricted flow. The use of tubing and top hole chokes for regulating gas-oil ratios is now quite common. In a few fields, notably East Texas, the use of tubing has become mandatory for the dual purpose of restricting flow and conserving gas.

The theory underlying restricted flow or back pressure control has been well stated by Miller[1] who says:

"Oil and gas flow through the irreglar channels in reservoir sands at different rates mainly because of the fact that one is a liquid and the other a gas. Therefore, because oil and gas have different characteristics of flow, application of back-pressure changes the rates of flow with relation to one another so that wide variations in gas-oil ratios are possible."

[1]Miller, H. C., "Back Pressure Control of Flowing Wells", Petroleum Development & Technology, 1928-29 A. I. M. E. p. 196.
[2]Pierce, H. R. and J. O. Lewis, "Principles of the Air-Gas Lift as Applied to Oil Production," Petroleum Development & Technology, 1927, A. I. M. E., p. 19.
[3]Hawkins, R. R., "Flowing Wells with Small Tubing," Petroleum Division, A. I. M. E. Houston meeting, October, 1931.
[4]Clark, William A., Petroleum Development & Technology, A. I. M. E. 1931, p. 206.

When the gas volumes become small and pressures low, wells can frequently be continued on natural flow by adopting tapered or graduated tubing. One of the clearest expositions of the theory of tapered tubing, either for natural flow or gas lift, has been given by Pierce and Lewis[2] who say:

"The use of tubing tapered downward is based upon the fact that as the gas approaches the top of the well the pressure becomes less; the gas expands and flows with increasing rapidity, thus greatly increasing the velocity. * * * In deep wells this velocity accelerates so much that the friction becomes enormous. At the bottom of the well the upward flow of the oil and gas is relatively slow, and probably much too slow for efficiency, considered from the standpoint of slippage. On the other hand, near the top of the well the flow is much too fast, considered from the standpoint of friction; therefore, the need is for a design which in effect will increase velocity at the bottom of a well and decrease velocity towards the top."

In Figure 2, we have a diagrammatic sketch of a well equipped with tapered tubing. The changes in size must be worked out with due regard to the space occupied by the increasing volume of gas as the pressure varies upon it. Combinations which will give satisfactory results in one well will not necessarily give results in another well even on the same lease. Volume, pressure and height of lift must all be taken into consideration, as well as the inter-relation between pipe diameter and velocity, before a proper combination can be chosen. Experiments by Hawkins[3] and others indicate that a well may be flowed on a remarkably small amount of formation gas if the pressure in pounds is equivalent to five per cent of the depth expressed in feet.

The use of tapered tubing has been principally to obtain better velocity control within the flow string itself. So far little or nothing has been published bearing on tapered tubing as a means of back-pressuring the reservoir.

When top hole chokes are used much gas energy is wasted because the gas is not fully expanded until it passes through the choke. Bottom hole chokes are designed to permit the same back-pressure control on the reservoir as with top hole chokes and also to utilize the energy of the expanding gas to lift oil to the surface. Bottom hole chokes have been classified as follows[4]:

(a) Fixed.
(b) Adjustable.
(c) Replaceable.

Fixed chokes can be changed only by pulling the tubing (the flow string); adjustable chokes can be changed in size by manipulation of the tubing, while replaceable chokes are changed by pulling and running them on a sand line or Halliburton line. In Figure 3, is shown a type of fixed choke. Oil and entrained gas are admitted through an opening at the bottom. If the occluded and dissolved gas is insufficient to supply the necessary lifting energy, some extraneous or free gas from the casing space is admitted through side ports.

Natural flowing methods have been greatly augmented by the use of tubing and chokes. When used merely to control rate of flow it is not discernable that any far reaching results will be derived but when used primarily as a means of reducing energy ratios their use will doubtless result in much longer natural flow and increased ultimate yield. Back pressure control by means of small flow strings and bottom hole chokes appears to be only in its infancy. Tapered tubing occupies a particular field of its own as a final corrective measure when pressures are low and volumes of gas are small. The combination of bottom hole choke and tapered tubing holds forth many enticing possibilities which have as yet no experimental evidence to uphold them.

Gas Lift Methods

Turning now to gas lift, or air lift, we find it convenient to divide the practice into two general groups: (a) Continuous

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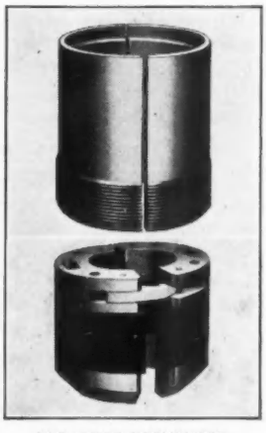
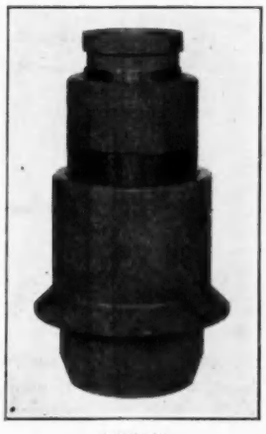


BLOWOUT PREVENTER

TYPE HC

TYPE G



TYPE HB

and (b) Intermittent. The continuous lift has been used at various times since the first oil wells were drilled. According to Miller[5], air lift, or the air blower as it was called in early days, was first applied to an oil well in 1846. Air lift was widely used along the Gulf Coast around 1901, especially at Spindle Top.

Not until the Seminole development did gas lift meet with wide favor in the Mid-Continent. This was not its first application but it was by far the most general. One wonders why it was not retained as a substitute for pumping. The explanation probably lies in several directions. In the first place continuous lift necessarily requires a certain amount of back-pressure against the sand reservoir. After fluid levels fell to 250 or 300 feet, sufficient difference in pressure between reservoir and well bore could not be maintained to permit maximum flow of oil from reservoir to well. In the second place, the only objective in view at Seminole was maximum daily rate of production and little research was done to adapt gas lift to small wells. In the last place, production men were reluctant to abandon conventional pumping methods because all their experience, all their equipment—in fact their entire producing organization has been built around pumping methods.

Continuous Lift

After the first flury of application died down and competitive requirements were satisfied, numerous ideas and devices were brought forth to adapt gas lift to small wells or to improve its efficiency on larger ones. The first step was to flow wells through tubing rather than through the annular space between casing and tubing. Tapered tubing was tried as a successor to straight tubing and although conflicting opinions are prevalent over the merits of tapered strings, the con-

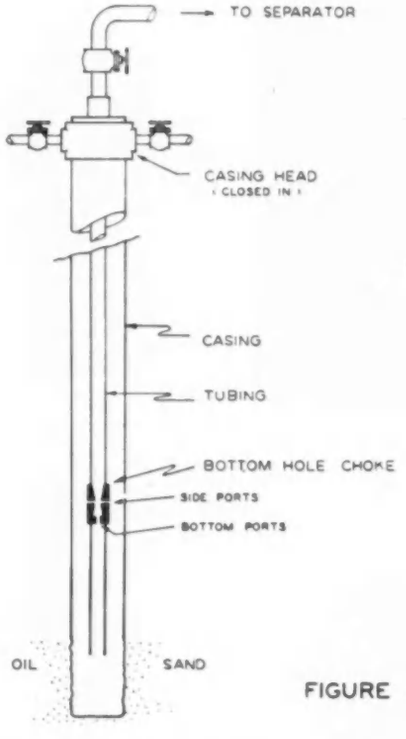


FIGURE 3

census of opinion seems to be that tapered strings are more efficient.

Numerous kick-off collars, flow collars and similar devices have appeared, most of them intended to permit gas flow into the tubing at various points. In Figure 4, we have a well sketched as it would appear when equipped with flow collars. At the right are larger sketches of two types of flow collars which can be inserted along the tubing for the purpose of kicking off the head of oil by stages. At "A" is shown a type of kick-off collar which closes when the velocity of gas rushing through it is sufficient to overcome the tension on the flat spring. Another type of kick-off collar, which is closed by the velocity of the rising oil column within the flow string, is shown at "B". Kick-off collars of this general type are some-

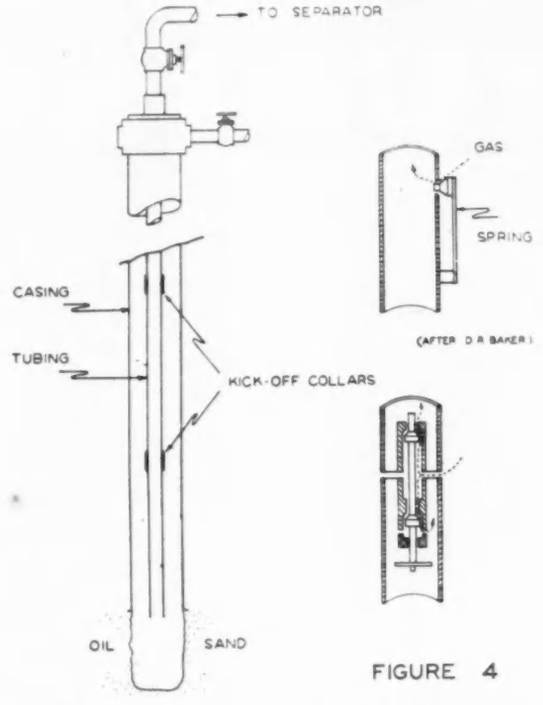


FIGURE 4

times called "stage lift" devices. Considerable progress has been made in the use of these auxiliaries to gas lift but so far their use has been based upon empirical information. When the fundamental laws controlling their performance are better understood it is probable that they will be of more assistance than at present.

Experiments have been made with the use of "booster" holes placed at intervals along a flow string. These are merely critical flow orifices of small diameter which will pass only a fixed quantity of gas from the annular space into the tubing as long as the pressure within the flow tubing is only half, or less than half, of the pressure in the annular space.

Intermittent Lift

During the past four or five years more attention has been given to intermittent than to continuous gas lift. At the close of the Seminole development, two types of intermitters were in general use. One of these consisted of an electrical timer usually located at a central point upon the lease, connected by two wires to a magnetic valve. The timer, which is somewhat similar in principle to the distributor of an automobile, is operated by a small motor driving a rotating contactor which makes contact to a large number of distributor segments. These segments may be connected in a great variety of ways and by varying their combination as well as the speed of the motor, almost any combinations of on and off time may be made. The second intermitter which was frequently used, consisted of a cylindrical tank pivoted about its center axis. In the center of the tank is a partition. A small pipe just above this partition allows a small stream of water to flow into one end of the tank. When that end becomes filled with water, it rocks downward and the partition diverts the stream of water to the opposite end of the tank. During the time the upper section is filling, the lower section is draining through a small

[5]Miller, H. C., "Gas Lift Methods of Flowing Oil Wells," U. S. B. M. Bulletin 323, p. 2.

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The greatest disadvantage of continuous or intermittent gas lift, when used on wells of small size or low fluid level, is the back pressure created against the reservoir by the flowing gas. Two schemes have been tried in recent years to eliminate or diminish the effects of the working pressure against the

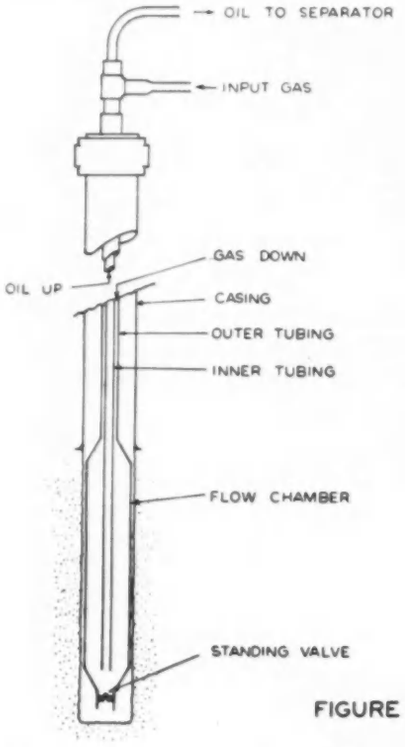

FIGURE 5

reservoir. The old flow chamber idea, which was originally brought forth in the early Ohio felds, was resurrected and, when combined with modern types of intermitting valves, has produced results that promise much for future production practices. The second scheme, known as the plunger lift, is a more radical departure from established practices. It is being used in several fields and is worthy of attention. These two methods will be discussed in more detail in the following paragraphs.

The chamber lift, shown in Figure 5, consists essentially of two strings of tubing run one inside the other. On the bottom of the outer tubing is an enlarged section equipped with a standing valve at the bottom. The inner string of tubing acts as a flow pipe and the annular space between it and the outer tubing is used as a gas passage. The inner tubing extends nearly to the bottom of the flow chamber, which is set as close as practicable to the bottom of a well. The length of the flow chamber and the diameters of the outer and inner tubing depend chiefly upon the daily production of the well. The maximum diameter of the flow chamber depends, of course, upon the diameter of the well casing. In operation, after a well has been equipped, high pressure gas is alternately applied to and released from the annular space between the two tubings. When pressure is applied to the top of oil standing within the flow chamber, the standing valve in the bottom of the chamber is forced shut. As pressure is increased, the oil is displaced from the chamber into the inner string of tubing and flowed to the surface. After the slug of oil has been ejected, the high pressure gas is released from the annular space and the flow chamber will be refilled from the well. During the flowing period no pressure has been exerted against the reservoir or sand.

Two popular methods are available for intermitting the gas pressure into the annular space. The first of these is the electrical timing device previously mentioned. The second device, which we may call the fluid level timer, is actuated by the fluid column within the well itself. For shallow wells this type of intermitter was originally operated through a third string of small diameter tubing run into the well and operating as a "starting" pipe. In Figure 6, we have a sketch illustrating the principles used for fluid timed chamber flow. Valves "A" and "C" are closed and valve "B" is open while the well is filling. A reducing valve cuts down the line pressure and permits a small amount of low pressure gas to flow through the starting pipe. As fluid rises over the lower end of the starting pipe, more and more back pressure is created against the starting pipe. Since the pressure to force gas out the lower end of the starting pipe is equal to the submergence of the

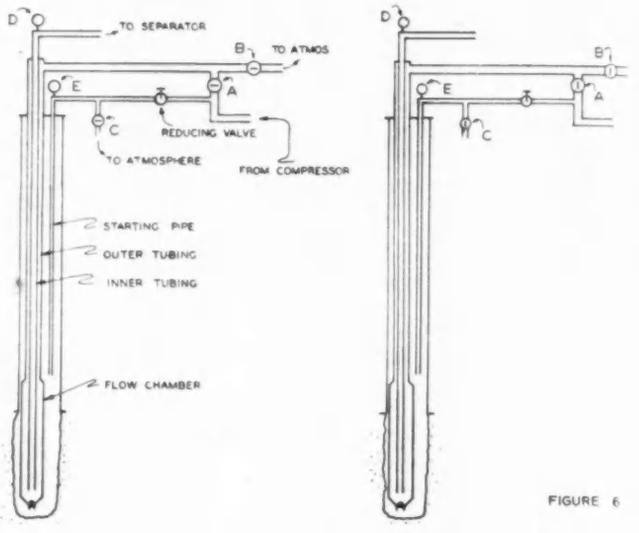

FIGURE 6

pipe, we can readily determine from the pressure shown on the gauge at "E" when the well has filled to the desired height. Valves "A" and "C" are then opened and valve "B" is closed and the well starts on a flowing cycle. Gauge "D" indicates pressure within the flow tubing. This pressure rises rapidly as the ejected fluid nears the top and indicates that valve "A" and "C" should again be closed and valve "B" opened. The automatic control which has been developed to perform the operations above described is actuated by an ingeneous combination of diaphrams and valves which take care of every phase of the operation. No attention is required beyond occasional inspection and cleaning. Only a few hand tools are required and the entire assembly can be overhauled in one or two hours.

In deep wells, the starting pipe may be eliminated if so desired and the inner or flow tubing connected in such a way that it will serve as a combined starting pipe and eductor tubing. This feature has broadened its field of application materially.

When using the electrical timer with a flow chamber, the cycles must be adjusted for length of on and off time until the intervals are giving the maximum rate of production and lowest rate of input gas consumption.

In one series of tests run with fluid timed chamber flow it was found possible to produce up to 60 barrels of oil per day from a depth of 2340 feet using 1500 cubic feet of input gas per day at 250 pounds pressure. The traps were of 5-3/16-inch casing from 40 to 65 feet in length, while the tubings were 1¼-inch and 2½-inch. During the tests, which extended over more than a year, it was determined that flow chamber flowing would increase production on nearly all wells. In some instances the daily production was raised 100 per cent. A group of 15 wells in the Cromwell field operating with mechanical timing

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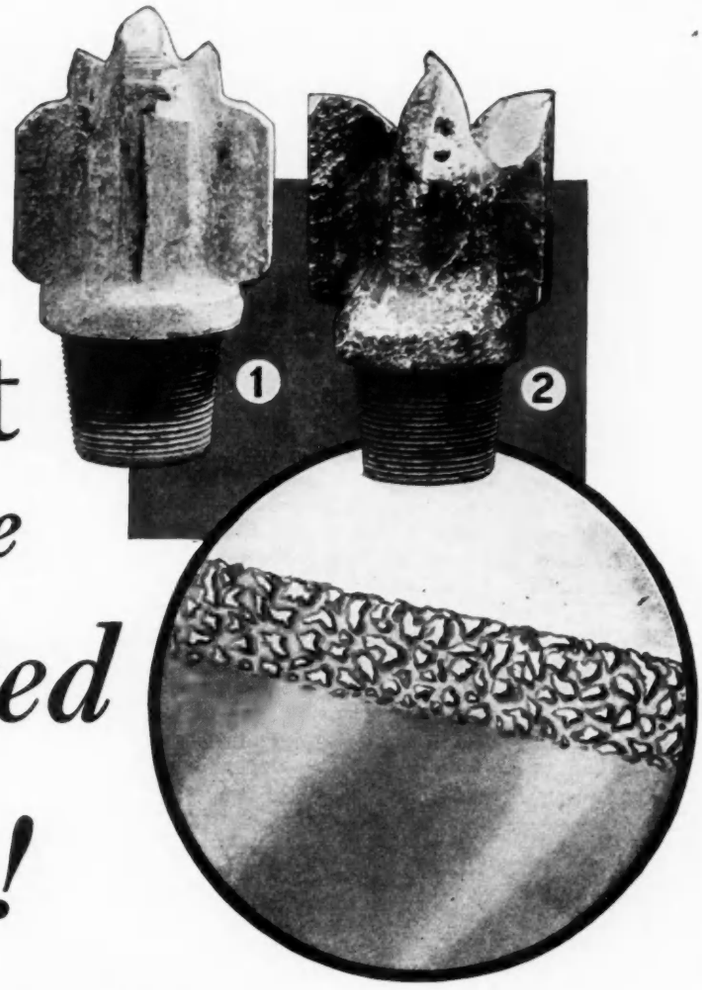

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were reported[6] to have increased from an average of 118 barrels to an average of 143 barrels per day when placed on chamber flow.

The plunger lift operates in such a way that the working pressures necessary to lift oil are very low. Some question may be raised as to its classification as a form of gas lift, but since gas pressure is the motive power which causes it to function, it has been placed in that group, temporarily at least. In some instances a well furnishes enough formation gas to operate the plunger lift, while in other cases outside gas must be introduced.

The general plan of a well equipped for plunger lift is shown in Figure 7. The tubing is reamed to insure a truly accurate diameter and special couplings are used that align the ends of the tubing perfectly. Any offsets at the joints would interfere with the operations. The tubing is supported at the top in a casing head which has a bonnet at the top creating an upper chamber into which fluid from the tubing is discharged. A metal plunger travels up and down in this tubing, going from top to bottom and back to the top again for each complete stroke or cycle. An enlarged view of the plunger is shown. The plunger valve is so designed that it will not close while falling through gas or fluid. At the bottom of the tubing is a foot-piece through which gas and fluid enter. The top of the tubing above the casinghead has a short "stack", (which is merely a piece of the reamed tubing), also a valve, above which is a surge chamber, connected through a by-pass of flexible hose to the flow line.

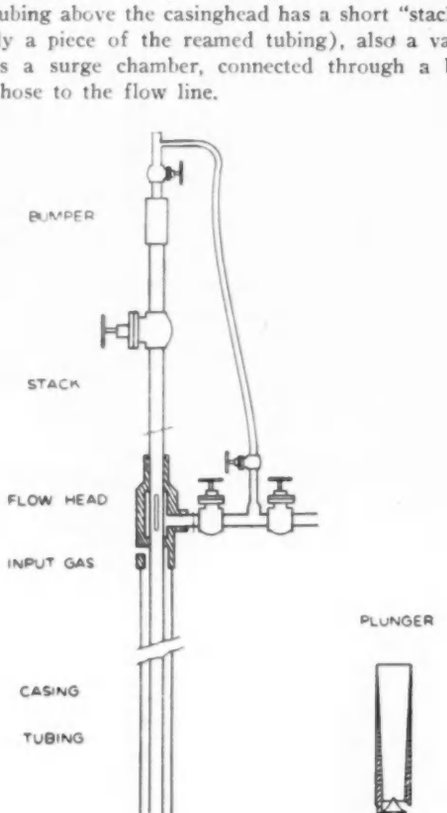

FIGURE 7

After the well is tubed and the footpiece set at the desired level, the plunger is placed in the surge chamber, which is then closed at the top. Upon opening the main valve "A", the plunger is released and falls to bottom. The plunger velocity through gas is around 40 feet per second and around eight to 10 feet per second through fluid. When the plunger strikes the footpiece, the poppet type plunger valve is closed, thus effectually blocking the upward passage of any gas. As soon as the pressure beneath the plunger becomes great enough to overcome the weight of fluid above, the plunger starts upward, pushing the fluid ahead of it. When the plunger reaches the surface, the fluid is discharged through the slotted openings within the casinghead and the plunger overrides the slots and remains in the stack until the gas pressure beneath it diminishes enough to allow the plunger valve to drop open, whereupon the plunger starts falling again. After the head is worked off the well, the plunger cycles will become regular and the quantity of oil brought up each stroke will be the same.

The plunger does not need to fit the tubing closely. A clearance of 20 to 30 thousandths of on inch (about 1/32), has been used. About two pounds of pressure is sufficient to float the plunger in the tubing and since the column of fluid above the plunger about equals the pressure of gas beneath it, there is only a slight differential to cause slippage of gas around the plunger.

The working pressure required is dependent upon the length of the column of fluid picked up on each stroke and not upon height of lift. The quantity of gas required is partly a function of the height of lift and partly of the operating pressure. A choke in the discharge line provides one means of regulating the rate of production or it may be further regulated by raising and lowering the footpiece. The plunger may be caught and examined at any time and a replacement made if necessary, but because both tubing and plunger are well lubricated, little wear takes place. Paraffin scraping plungers may be used where deposition of this material interferes with continuous operation.

Wide ranges of capacity can be had with this apparatus by using larger or smaller tubing and varying the length of head picked up each stroke. At one well, 40 barrels of oil per day were produced by plunger lift from a depth of 6000 feet in 2½-inch tubing, using 3500 cubic feet of input gas per barrel at 50 pounds pressure. The plunger averaged about seven strokes per hour. On a second well, 180 barrels per day were produced through 2½-inch tubing from a depth of 5600 feet, with a pressure of 175 pounds and an input ratio of 1500 cubic feet per barrel. In this case the plunger was making a round trip every 10½ minutes and bringing up about 1½ barrels per trip. In the former well, the plunger brought up but ¼ barrel per stroke.

Pumping Methods

Surface Prime Movers

With one exception we shall give but brief attention to all pumping equipment which is driven by surface prime movers. Not for the reason that improvements have not been made, but because these improvements have not introduced new principles. As long as we continue to generate power at the surface and transmit it to the point of application by means of sucker rods or similar linkage, we are using much the same principles that have been followed from the beginning. This statement is not to be construed as derrogatory to ordinary pumping because it was stated in the introduction that these conventional methods would probably serve the industry for years to come. Research in metallurgy, improved manufacturing methods and intelligent study of the producer's problems have enabled manufacturers to offer products for ordinary pumping which are far superior to those of a few years ago. Modern design will eliminate many flaws which have heretofore been tolerated as necessary nuisances. Moreover, the efficiency of the newer equipment is vastly superior to older types. We hold it to be a fact however that it is possible to increase dimensions and add weight or horsepower to this equipment

[6]Sclater, K. C., "The Petroleum Engineer," September, 1930, p. 50.

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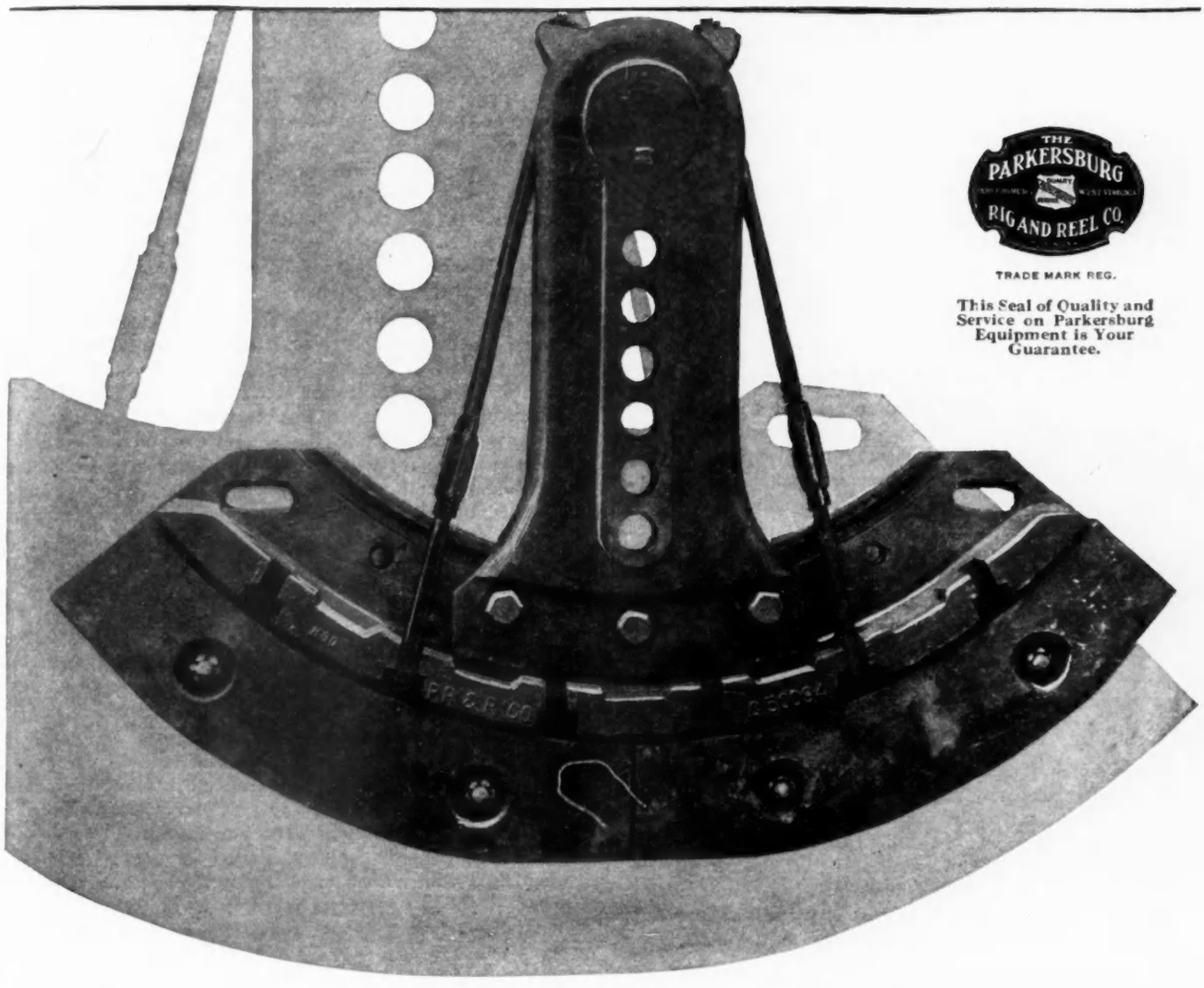

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only up to a certain point. Beyond that point the whole structure is due to collapse of its own weight or at least become a self-devouring mechanism which consumes the efficiency it seeks to create.

The exception which should be mentioned here is a recently introduced pneumatic pumping cylinder, designed to reduce the amount of equipment necessary at individual wells and permit centralization of power equipment. The pneumatic cylinder is suspended from the crown block by hangars to each corner. High pressure gas or air is supplied beneath a single acting piston and special inlet and exhaust valves are regulated to take advantage of early cut off on the power stroke. The exhaust gas returns to the compressors under partial pressure. The length and number of strokes per minute are easily adjustable. Although "air heads" have been used previously, the development of this improved design offers one splendid "follow up" solution to the pumping problem when gas lift has been in prior use on the lease. Instead of moving the gas lift stations and installing ordinary beam pumping equipment the "air heads" may be connected to the existant high pressure gas system, rods and tubing run into the well and pumping started. Data on the performance of these devices has not been published but tests have been under way for many months.

Submerged Prime Movers

The theory of a submerged prime mover has so many obvious advantages that it has also received much attention during the past few years. As shown on the outline, three choices of driving energy are available: pneumatic, hydraulic and electric. Each of the three types has its adherents who have built and tested machines embodying their ideas. In the Mid-Continent fields the submerged electric pump has received the largest share of attention due to the active interest of at least one major producing company. This pump has passed the purely experimental stage and entered upon the period of development which must inevitably follow. Submerged pneumatic or hydraulic prime movers are yet in the embryonic or experimental stage although they are being studied with renewed interest as deeper producing horizons are discovered.

The electric type of submerged prime mover consists of an electric motor of special design located at the bottom of the assembly. Immediately above it is a protector, or stuffing box, section and at the top is a multistage centrifugal pump. The entire assembly is run into the well on tubing and electric power is transmitted through a specially insulated cable. Up flow of oil is through the tubing. Most of the experiments with this type of submerged prime movers have so far been conducted in wells having short lifts of 1500 or 2000 feet, but where it was necessary to produce huge volumes of fluid. Recently smaller types have been made capable of handling smaller quantities of fluid from greater depths.

Submerged pneumatic or hydraulic prime movers are practically all of reciprocating types and require at least one and sometimes two strings of tubing for transmission of the driving power to the engine. Most designs of pneumatic engines for this purpose have attempted to use the exhaust gas or air to lighten the load of fluid which is being lifted. If a really satisfactory submerged prime mover can be developed, it will greatly increase the depth from which pumping is possible. The centrifugal pump is primarily adaptable to shorter lifts where great volume is to be handled. The plunger pump is adaptable to lifts of 7000 or 8000 feet, but the difficulties of actuating it by means of sucker rods increase out of all proportion to the increase in depth. It is possible to pump from 7000 feet or more using our present equipment and operating the pumps with long slow strokes, provided the operator is content with a small daily production. Development of a really satisfactory prime mover which can be placed next to the working barrel and receive its energy from the surface in the form of compressed gas or fluid pressure would permit a higher number of strokes per minute and greater rate of production. Such a device must operate with great reliability and infrequent attention. Down time for failures would be out of proportion to failures with surface prime movers and require a tubing job for each failure—something of major consequence for a 7000-foot well. The field for submerged prime movers is so attractive that they are bound to receive an increasing amount of attention but experimental work will be slow.

Summary

During the past five years, the depth from which oil must be produced has increased from 4500 feet to around 6500 feet No major pools have yet been discovered at greater depths in Kansas or Oklahoma, but wildcat wells of 7000 or 8000 feet are no longer a novelty. It is entirely logical to expect that within the next five years, producers in the Mid-Continent must solve the problem of lifting oil from those depths by some means which will yield a profit to themselves. Lower market prices have forced the operator to investigate his producing methods carefully, seeking for more efficient equipment with which to produce from present depths.

In view of the unfavorable conditions which have existed throughout the past two years, it is indeed astonishing to look at the progress which has been made in producing methods even during the times of economic stress. In the first place, the fast increasing realization that formation gas energy is the most impotrant agent in the recovery of oil has lead producers to strive for its conservation by all the means at their command. Open flow of wells has very largely given way to restricted methods, in which chokes or tubing are employed to back pressure the reservoir and control the ratio of incoming gas to oil. Engineering practice has developed a better knowledge of the principles underlying movement of gases and liquids through reservoir sands and through pipes. With this information, the producer can confidently expect to flow wells on their own energy for a much greater length of time and, what is more important from his point of view, secure an increased ultimate yield of oil.

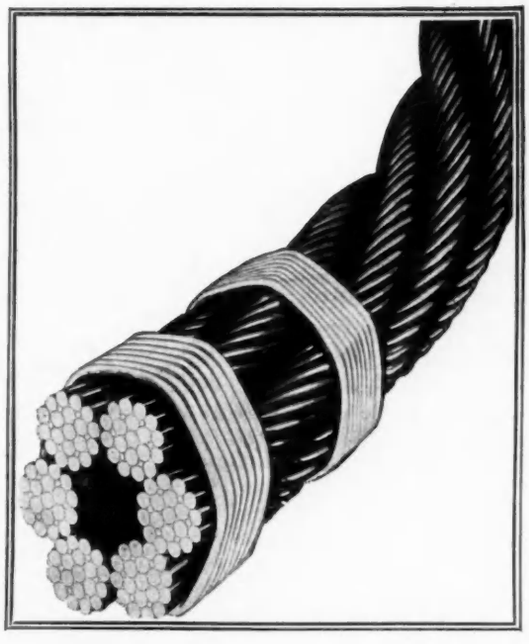
Gas lift methods have been developed and tried which extends their application to very small and very deep wells. The application of chamber lift and plunger lift reduce the number of working parts in a well to only one. Small tapered or straight flow strings require no moving parts. Chamber lift can be used on wells with little or no formation pressure and when used with automatic intermitters, eliminates to a great degree the human equation. When used with fluid level timers, the well determines its own rate of pumping. Plunger lift reduces the necessary working pressure to a minimum and the pressure required is practically independent of the height of lift.

Conventional pumping equipment is getting a thorough overhauling and redesigning which will certainly extend its field of application and promises much greater efficiency than ever before. Such features as submerged prime movers are attracting a host of experimenters and manufacturers who will eventually solve the problem, at least for certain types of work.

Last but not least in the tendencies of present production practice, we see a vast difference in the technique of production men and operators. An understanding of a few fundamental laws governing the behavior of gas and fluids has given them a different conception of producing oil wells. Gas lift, tapered tubing and bottom hole chokes all have some place in the modern producers tool kit. They have been taken from the laboratory shelves and made into useful implements in which the production man has confidence. Chamber lift, plunger lift and submerged prime movers will find their way into the tool kit in time.

None are so blind as those... who will not see

"I DON'T know how to get lower rope costs" usually means "I won't try any other make of rope than I'm now using". Wickwire Spencer has shown new "lows" time and time again to users who would see. Yes, this rope is made of a special mild steel; it is unusually flexible and withstands external abrasion and wear to a surprising degree... but the main thing about it is... it lives longer . . . therefore costs less. Don't you want to hear about some of these new "lows"?



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Colorado	2,650	2,450
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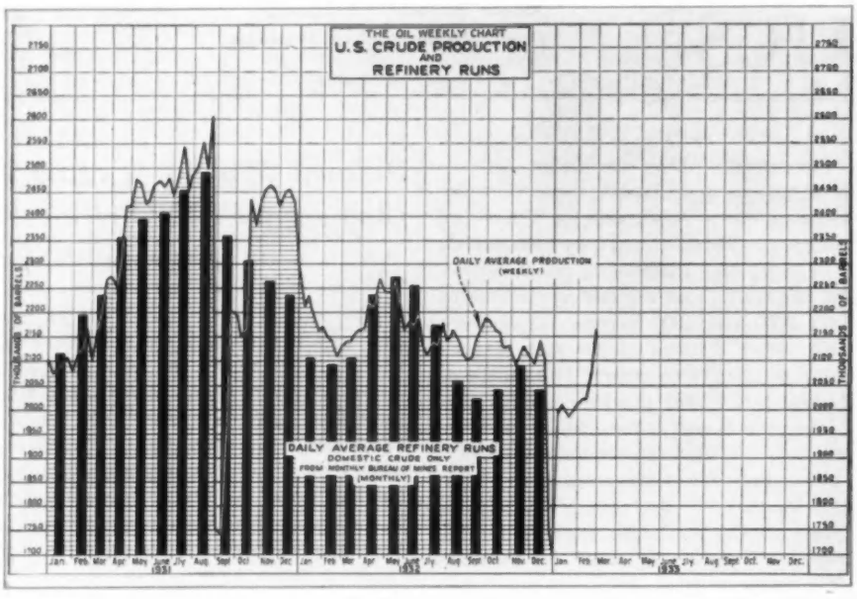

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Kerosenes

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California Crude Price Outlook Not Brightest

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It has been difficult to buy crude oil on contracts extending a year or two into the future, yet there has been an overproduction of oil from day to day. Most of the surplus oil on the market has been picked up as spot sales, and the small refiner has been able to meet the bulk of his needs in this manner.

Movement of a limited amount of East Texas gasoline to the Pacific Northwest has been accompanied by lower gasoline prices in the district. It will be impossible to market Mid-Continent gasoline in Washington and Oregon at prices prevailing there now. Lower California quotations have discouraged shipments to Southern California, although unloading facilities have been provided at Long Beach harbor for incoming tankers. The long haul from the Gulf Coast is a little too much to allow a profit at prevailing prices.

Some of the smaller California refiners have had trouble in disposing of their heavier fractions. Fuel oil sales have been low during the winter, and the larger companies are supplying most of that used. Low prices for gasoline and an accumulation of heavier fractions have been enough to weaken the position of refiners who have depended upon sales of all products for a profit.

State production has been slightly higher, and the outlook is not bright for steady crude oil prices. Several fields have shown little tendency to cooperate, and the state total may remain above 460,000 barrels. Lower crude oil prices may be the only remedy for a very nervous production situation.

Federal Gasoline Tax in January Under December

Washington, D. C.—Gasoline tax collections in January, representing December sales, totaled $11,341,892.82, against $13,268,950.95 the preceding month, and receipts from lubricating oil were $1,320,910.92, against $1,372,055.36, according to figures just made public by the Internal Revenue Bureau. Collections from the gasoline tax during the first half of the current fiscal year total $73,642,258, indicating that for the full year this will be one of the few taxes to bring in the revenue originally anticipated. Total receipts from the tax on lubricating oils for the half year were $8,327,934, but inasmuch as the estimated annual return of $33,000,000 included also the collections from imports, it cannot be figured how far short this levy will fall.

Russia Buys Casinghead Gasoline Here in U. S.

A CARGO of casinghead gasoline, to be shipped at New Orleans in the motor vessel Glittre, has been bought by the Russians for their European requirements. It is also understood the Russians have indicated they will be in the market for further considerable quantities.

Opinion is expressed that this links up with the general feeling that Russia is likely to be less of a factor in the export market, as Soviet production is already falling short of expectations and the demands for internal use are far in excess of the supplies as now allocated.

The immediate purpose for which these cargoes are being bought is presumably for blending, in the United Kingdom or in other European markets, with the products now being shipped from Russia. It has been known that the Russians have been having considerable difficulty, under their present refinery arrangements, in producing the desired quality, and apparently this has got to a point where it has become necessary for them to blend in lighter oils purchased abroad.

Statistical Committee Working Upon Forecast

New York.—Preliminary work on the first 1933 quarterly report on, and forecast of, motor fuel demand and crude oil requirements has been begun by eastern members of the Sub-Committee of Statisticians and Economists at meetings in the offices of the American Petroleum Institute. The committee is a unit of the Institute's Division of Refining Committee on Refinery Statistics and Economics.

Tentative plans call for presentation to the main committee, possibly by March 1, of a report covering the period January 1 to June 30, 1933. Each report reviews and revises the last three months of the preceding report. It is expected the second quarterly report and forecast will be presented at the Institute's mid-year meeting in Tulsa, Oklahoma, in May.

Imports Drop; California Shipments Show Increase

Imports of crude and refined oils at principal United States ports for the week ended February 18 totaled 856,000 barrels, a daily average of 122,286 bar-

Crude Runs to Stills, Motor Fuel Stocks, Gas and Fuel Oil Stocks and Cracked Gasoline Production, Week Ended February 18, 1933

(Figures in barrels of 42 gallons each)

DISTRICT	Daily Refining Capacity of Plants			Crude Runs to Stills		MOTOR FUEL STOCKS					Gas and Fuel Oil Stocks	Daily Charging Capacity of Cracking Units			Cracked Production Daily Average
	Potential Rate	Reporting Total	Reporting %	Daily Average	% Operated	(a) At Refineries	(b) Bulk Terminals	(b) In Transit	(c) Other M.F. Stocks	Total Motor Fuel		Potential Rate	Reporting Total	Reporting %	
East Coast	644,700	638,700	99.1	440,000	68.9	5,644,000	7,111,000	1,041,000	438,000	14,234,000	7,191,000	344,400	326,400	94.8	75,000
Appalachian	144,700	135,000	95.0	81,000	60.0	1,344,000	413,000	.....	197,000	1,954,000	902,000	59,100	57,600	97.5	20,000
Ind., Ill., Ky	434,900	424,000	97.5	294,000	69.3	4,854,000	2,740,000	.....	168,000	7,762,000	3,085,000	341,400	328,200	96.1	70,000
Okla., Kans., Mo	459,300	390,000	84.9	209,000	53.6	3,634,000	742,000	.....	687,000	5,063,000	2,786,000	257,400	238,100	92.5	49,000
Inland Texas	315,300	177,700	56.4	82,000	46.1	1,277,000	46,000	.....	226,000	1,549,000	2,135,000	117,300	95,100	81.1	18,000
Texas Gulf	555,000	542,000	97.7	411,000	75.8	5,950,000	143,000	.....	246,000	6,339,000	6,756,000	506,500	495,500	97.8	82,000
Louisiana Gulf	146,000	142,000	97.3	86,000	60.6	1,178,000	159,000	124,000	30,000	1,491,000	2,133,000	74,400	74,400	100.0	20,000
North La.,—Ark.	89,300	79,000	88.5	54,000	68.4	219,000	16,000	46,000	49,000	330,000	620,000	29,500	25,500	86.4	8,000
Rocky Mountain	152,000	138,000	90.8	31,000	22.5	1,384,000	.....	.....	29,000	1,413,000	567,000	71,400	68,100	95.4	10,000
California	915,100	866,100	94.6	384,000	44.3	12,946,000	.....	.....	2,380,000	15,326,000	99,135,000	197,700	197,700	100.0	27,000
TOTALS WEEK: February 18, 1933	3,856,300	3,532,500	91.6	2,072,000	58.7	38,430,000	11,370,000	1,211,000	4,450,000	55,461,000	125,310,000	1,999,100	1,906,600	95.4	379,000
February 11, 1933	3,856,300	3,532,500	91.6	2,045,000	57.9	37,996,000	11,397,000	1,224,000	4,425,000	55,042,000	125,816,000	1,999,100	1,906,600	95.4	412,000
Below are set out estimates of Crude Runs to Stills and Motor Fuel Stocks on B. of M. Basis for Week Feb. 18, 1933, compared with certain Feb. 1932 Bureau figures.															
Estimate B. of M. Basis Week Feb. 18, 1933		2,160,000	(d)	39,030,000		13,080,000		4,450,000	56,560,000						405,000
U. S. B. of M. February 1932 Figures:—			2/1	41,501,000		14,528,000		4,160,000	60,189,000						
February 1932 Daily Average Crude Runs		2,201,000	2/29	46,719,000		14,033,000		4,690,000	65,442,000		February 1932 Daily Average Cracked Prod				469,000

(a) Stocks at refineries, except in California district, which includes stocks of finished gasoline and engine distillate at refineries, at water terminals and at sales distributing stations and any amounts in transit thereto.
(b) By districts, East of California only. In California, bulk terminal and in transit stocks are included under "At Refineries" heading. See note (a).
(c) Estimated. Includes motor fuel in pipe lines and unblended natural gasoline at refineries and plants, also blended M. F. at plants.
(d) Estimated to permit comparison with A. P. I. Economics Report which is on Bureau of Mines basis.

rels, as against 144,286 barrels daily the previous week and 127,286 barrels daily for the four weeks ended February 18. These figures are from reports of the American Petroleum Institute.

The 856,000 barrels included 582,000 barrels received at New York, 108,000 barrels at Philadelphia, and 166,000 barrels at other Atlantic ports; and comprised 565,000 barrels of crude oil and 291,000 barrels of fuel oil.

Summarized Review of Week's Field Results

State—	Completions	Oil Wells	Gas Wells	Failures	Initial Prod.
Arkansas	1	0	0	1	0
California	4	3	1	0	1,200
Illinois	0	0	0	0	0
Indiana	13	5	3	5	45
Kansas	6	3	0	3	1,928
Kentucky	2	1	0	1	500
Louisiana	9	4	1	4	1,385
Michigan	3	2	0	1	250
Mississippi	0	0	0	0	0
New Mexico	0	0	0	0	0
New York	7	3	3	1	13
Ohio	13	2	9	2	25
Oklahoma	16	10	2	4	1,274
Pennsylvania	7	6	1	0	26
Texas	78	61	1	16	274,858
West Virginia	8	2	6	0	8
Miscellaneous	0	0	0	0	0
Total	167	102	27	168	281,712

For the week ended February 18 receipts of California oil at Atlantic and Gulf Coast ports, including crude and refined oils, totaled 518,000 barrels, an average of 74,000 barrels daily, as against 22,857 barrels daily the previous week and 56,321 barrels daily the four weeks ended February 18.

The shipments for the week of February 18 included 157,000 barrels received at New York, 118,000 barrels at Philadelphia, 169,000 barrels at other Atlantic ports, and 74,000 barrels on the Gulf Coast (fuel oil received at Port Arthur, Texas). The 518,000 barrels consisted of 118,000 barrels of gasolne, 110,000 barrels of kerosene, and 300,000 barrels of fuel oil.

San Antonio, Texas.—Edwin M. Jones completed a 150-barrel gasoline well in J. Mitchell 4, Lease 55, Refugio Survey, Refugio field, at 6414 feet. It topped the sand at 6361 feet. The pressure was registered at 1900 pounds. This well is near Josephine Mitchell 1-B, which was drilled to 9131 feet last year.

Charter Granted for Pipe Line for Conroe Field

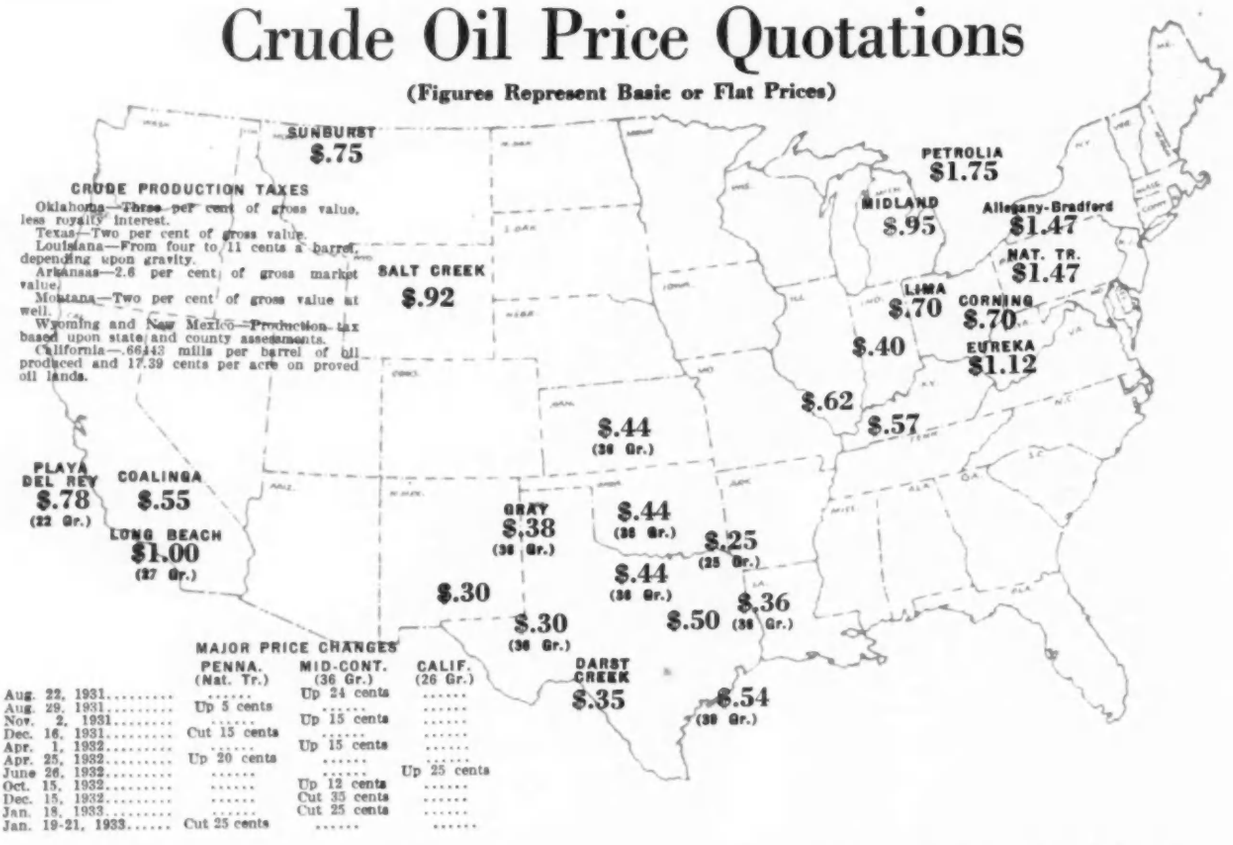
Houston.—While no additional announcements have been made concerning the eight-inch trunk line to be built from Conroe field by Channel Transport and Marketing Company, which was yet to be organized when the project was announced two weeks ago, charter was granted the company in Dover, Delaware, this week. Capital stock was specified as 1000 shares of no par, and E. M. Closuit of Dallas, Texas, was named Texas agent.

Comparison of Permits Granted for New Wells

State	For week ending Feb. 18	Total this month	Total this year	Total this date last year	1932 year total
Arkansas	1	2	25	1	33
California	9	18	32	33	354
Louisiana	6	24	58	60	451
Kansas	9	22	61	70	463
Michigan	8	18	34	24	183
Oklahoma	15	52	131	111	1054
Texas	124	451	952	825	7099
Total	172	587	1293	1124	9637

Crude Oil Price Quotations

(Figures Represent Basic or Flat Prices)



CRUDE PRODUCTION TAXES

Oklahoma—Three per cent of gross value, less royalty interest.
Texas—Two per cent of gross value.
Louisiana—From four to 11 cents a barrel, depending upon gravity.
Arkansas—2.6 per cent of gross market value.
Montana—Two per cent of gross value at well.
Wyoming and New Mexico—Production tax based upon state and county assessments.
California—.66⅔ mills per barrel of oil produced and 17.39 cents per acre on proved oil lands.

MAJOR PRICE CHANGES

	PENNA. (Nat. Tr.)	MID-CONT. (36 Gr.)	CALIF. (26 Gr.)
Aug. 22, 1931	.....	Up 24 cents	.....
Aug. 29, 1931	Up 5 cents	.....	.....
Nov. 2, 1931	.....	Up 15 cents	.....
Dec. 16, 1931	Cut 15 cents	.....	.....
Apr. 1, 1932	.....	Up 15 cents	.....
Apr. 25, 1932	Up 20 cents	.....	.....
June 26, 1932	.....	.....	Up 25 cents
Oct. 15, 1932	.....	Up 12 cents	.....
Dec. 15, 1932	.....	Cut 35 cents	.....
Jan. 18, 1933	.....	Cut 25 cents	.....
Jan. 19-21, 1933	Cut 25 cents	.....	.....

Official Postings and Differentials

(Revised to February 24, 1933)

CALIFORNIA: (Effective June 26, 1932.)

Signal Hill, Seal Beach, Alamitos Heights, Huntington Beach, Olinda-Brae Canon, Torrance and Richfield: 14 to 19.9 gravity 65 cents; 20-20.9 gravity 69 cents; 21 gravity 74 cents; 22 gravity 79 cents; 23 gravity 84 cents; 24 gravity 89 cents; 25-25.9 gravity 93 cents; top posting for Torrance and Richfield; 26-26.9 gravity 97 cents, top price for Seal Beach, Alamitos Heights and Huntington Beach; 27-27.9 gravity $1.00; 28-28.9 gravity $1.03, the top price for Olinda-Brae Canon; 29-29.9 gravity $1.06; and 30-30.9 gravity, $1.09, the Signal Hill top posting.

Inglewood: 14 to 19.9 gravity 65 cents; 20-20.9 gravity 71 cents; 21 gravity 77 cents; 22 gravity 82 cents; 23 gravity 87 cents; 24-24.9 gravity 92 cents, the top price.

Playa Del Rey: 14 to 19.9 gravity 65 cents; 20-20.9 gravity 69 cents; 21 gravity 74 cents; 22 gravity 78 cents; 23 gravity 82 cents; 24 gravity 86 cents; 25 gravity 91 cents; 26-26.9 gravity 96 cents, the top price. Field gathering charges of 5 cents a barrel.

Athens, Rosecrans and Dominguez: 24-24.9 gravity 89 cents; 25-25.9 gravity 93 cents; 26 gravity 97 cents; and 27-27.9 gravity $1.00 with three cents additional for each degree gravity upward, ending at 32-32.9 gravity $1.15.

Elwood Terrace: 33-33.9 gravity $1.04 and 6 cents more for each additional degree of gravity, ending with 37-37.9 gravity $1.28, all prices f.o.b. ship.

Whittier and La Habra: 14 to 19.9 gravity 65 cents; 20-20.9 gravity 68 cents; 21 gravity 72 cents; 22 gravity 77 cents; 23 gravity 83 cents; and 24-24.9 gravity 89 cents, the top price.

Montebello: 14 to 20.9 gravity 65 cents; 21-21.9 gravity 67 cents; 22 gravity 70 cents; 23 gravity 73 cents; 24 gravity 76 cents; 25-25.9 gravity 80 cents, the top price.

Coyote Hills: 14 to 20.9 gravity 65 cents; 21-21.9 gravity 66 cents; 22 gravity 70 cents; 23 gravity 76 cents; 24 gravity 81 cents; 25 gravity 86 cents; 26 gravity 90 cents; 27 gravity 94 cents; 28 gravity 98 cents; 29 gravity $1.02; and 30-30.9 gravity $1.05, the top price.

Santa Fe Springs: 24-24.9 gravity 73 cents; 25 gravity 79 cents; 26 gravity 84 cents; 27 gravity 89 cents; and 28-28.9 gravity 94 cents, with 4-cent differential for each degree of gravity upward to 35-35.9 gravity $1.22.

Newhall, McKittrick and Kern River: 14 to 19.9 gravity 55 cents.

Midway-Sunset, Elk Hills and Buena Vista: 14 to 19.9 gravity 55 cents; 20-20.9 gravity 59 cents; 21 gravity 63 cents; 22 gravity 69 cents; 23 gravity 75 cents; 24 gravity 81 cents; 25-25.9 gravity 87 cents and 5-cent differential for each additional degree gravity ending with 36-36.9 gravity $1.12.

Lost Hills: Same as Midway-Sunset up through 25-25.9 gravity 87 cents, then 26-26.9 gravity 91 cents; 27 gravity 94 cents; 28 gravity 99 cents; 29 gravity $1.02; and ending 30-30.9 gravity $1.05.

Coalinga: 14 to 19.9 gravity 55 cents; 20-20.9 gravity 59 cents; 21 gravity 62 cents; 22 gravity 65 cents; 23 gravity 68 cents; 24 gravity 72 cents; and ending 25-25.9 gravity 75 cents.

Wheeler Ridge: 14 to 19.9 gravity 55 cents; 20-20.9 gravity 57 cents; and 21-21.9 gravity 60 cents, with 3 cents more for each additional degree of gravity, ending 25-25.9 gravity 72 cents.

Oklahoma, Kansas, North, North Central and East Central Texas: below 29 gravity 28 cents, 29-29.9 gravity 30 cents, with 2-cent differential to top of 52 cents 40 and above: effective Jan. 18, 1933, by Stanolind, Deep Rock, Champlin, Sinclair Prairie, Continental, Barnsdall, Bell Oil & Gas, Tide Water, Vickers Petroleum, El Dorado Refining, Globe Refining; effective Jan. 19 by Shell, Texas, and White Eagle; effective Jan. 20 by Carter, Gypsy, Gulf, Phillips, and Humble. Same schedule as above, except for carrying gravity scale lower, to bottom price 20 cents for crudes below 25 gravity, made effective Jan. 18 by Skelly and Jan. 20 by Magnolia. Same schedule as above, except for making bottom price of 20 cents apply to all crudes below 28 gravity, made effective Jan. 19 by Empire and Jan. 20 by Pure.

East Texas: Effective by all buyers Jan. 18, 1933, or within few days: 50 cents.

Corsicana, Texas, Heavy: Magnolia, effective Jan. 20, 1933, 30 cents.

Texas Panhandle: The Texas Co., effective Jan. 19, 1933, for Gray County, 36 cents for 34-34.9 gravity, with two-cent differential to 48 cents for 40 gravity and above, and same grades in Carson and Hutchinson Counties range from 31 to 43 cents. Effective Jan. 20, Humble, Gulf, and Magnolia quoted each corresponding grade two cents lower per barrel than Texas. Philtex Oil Co. and Sinclair Prairie, effective Jan. 18, and Danciger Oil & Ref. Co., effective Jan. 28, limited Gray County to top price of 40 cents for 40 gravity and above, while two former companies quoted top price of 30 cents for 40 gravity and above in Carson and Hutchinson Counties.

West Texas and New Mexico: Effective Jan. 19, 1933, by Texas Co., Jan. 20 by Humble, Shell, Magnolia, Gulf and others: 30 cents a barrel. Includes crude from Crane-Upton, Crockett, Ector, Howard-Glasscock, Pecos, and Winkler Counties, Texas, and Lea County, N. Mex.

Gulf Coast:

Salt Dome Region: The Texas Co., effective Jan. 19, 1933, below 22 gravity 55 cents with one-cent differential to 74 cents for 40 gravity and above. Humble, Gulf, Sun, and Atlantic, effective Jan. 20, 1933, below 20 gravity 32 cents, 20-20.9 gravity 34 cents, with two-cent differential to top price 62 cents for 34 gravity and above.

Cameron Meadows, Louisiana, Magnolia, effective Jan. 20, 1933, below 20 gravity 22 cents, 20-20.9 gravity 24 cents, with two-cent differential, ending with 34 gravity and above 52 cents; Lockport and Iowa, Louisiana, regular salt dome field schedule of Humble and others.

Conroe, Texas: The Texas Co., effective Jan. 19, 1933, 69 cents for 35-35.9 gravity, with one-cent differential upward to 74 cents for 40 gravity and above. For same grades Humble, effective Jan. 20, quoted range of 54 to 64 cents using two-cent differential; while Tide Water posted a range of 59 to 64 cents, using a one-cent differential.

South Texas:

Darst Creek: The Texas Co., effective Jan. 19, 1933, and Magnolia, effective Jan. 20, 35 cents; Humble effective Jan. 20, posted 40-cent price. **Luling:** Magnolia, effective Jan. 20, 30 cents. **Salt Flat:** effective Jan. 20, 1933, Humble and Shell 40 cents. **Lytton Springs:** Magnolia, Jan. 20, 45 cents. **Mirando:** Humble and Magnolia, Jan. 20, 35 cents. **Pettus:** Humble, Jan. 20, 55 cents. **Refugio Heavy:** Humble and Atlantic, effective Jan. 20, 1933, 45 cents. **Refugio Light:** same as Humble's schedule for Gulf Coast salt dome region.

North Louisiana and Arkansas:

Caddo, Homer, Haynesville, Bull Bayou, Sabine, Crichton, DeSoto-Red River, Cotton Valley, Sarepta, Cartersville, Pine Island, El Dorado, Rainbow Light: The Texas Co., effective Jan. 19, 1933, and Gulf and Louisiana Oil Ref. Co., effective Jan. 20: below 29 gravity 28 cents, 29-29.9 gravity 30 cents, with 2-cent differential to 52 cents for 40 gravity and above. Standard: Caddo below 29 gravity 20 cents, with 2-cent differential to 44 cents for 40 and above; Homer below 29 gravity 28 cents to 52 cents for 40 and higher; Haynesville below 29 gravity 19 cents and 2-cent differential to 43 cents for 40 gravity and above; Sabine, DeSoto and El Dorado below 29 gravity 25 cents with 2-cent differential to 49 cents for 40 gravity and above; Sarepta-Cartersville below 29 gravity 17 cents and 2-cent differential to 41 cents for 40 gravity and above. Magnolia, effective Jan. 20, 1933, below 29 gravity 20 cents, 25-25.9 gravity 22 cents, with 2-cent differential to 44 cents for 40 gravity and above, except El Dorado (East), posted at 20 cents flat price.

Smackover:

The Texas Co., effective Jan. 19, 1933, and Gulf, effective next day: 30 cents; Standard of La. and Magnolia, effective Jan. 20, 20 cents; Louisiana Oil Ref. Co., effective Jan. 20, 25 cents.

Rocky Mountain States: (Effective December 16, 1932).

Salt Creek: Below 29 gravity 78 cents; 29-29.9 gravity 78 cents with differential of 2 cents each degree to 40 and above. Top price $1.00.

Elk Basin and Grass Creek: 87 cents; **Big Muddy:** effective Jan. 24, 1933, 50 cents; **Lance Creek:** 92 cents; **Rock Creek:** effective Jan. 24, 1933, 46 cents; **Sunburst:** effective November 7, 1932: 75 cents; **Osage:** 98 cents; **Cat Creek:** $1.20; **Pendera:** 90 cents; **Hogback, New Mexico:** 80 cents.

Mid-Western States: (Effective Jan. 18, 1933).

Lima: 70 cents. **Indiana:** 40 cents; **Illinois:** 62 cents; **Princeton:** 62 cents; **Wooster:** 70 cents; **Western Kentucky:** 57 cents.

Pennsylvania: (Effective Jan. 21, 1933).

Bradford District: $1.47; National Transit Oil: $1.47; Southwest Pennsylvania Pipe Line Oil: $1.17; Eureka Pipe Line Oil: $1.12; Buckeye Pipe Line Oil: 97 cents; Corning Crude: 70 cents.

Michigan: (Effective Dec. 31, 1932). **Midland:** 95 cents a barrel. **Muskegon:** 76 cents to $1.00 a barrel.

Canada: (Effective Jan. 18, 1933).

Petrolia: $1.75; Oil Springs: $1.82.

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HUMBLE OIL & REFINING COMPANY

HOUSTON, TEXAS

Four Texas Bills Propose Oil Proration by Taxation

Austin, Texas.—Four bills designed to enforce proration through taxation will be heard before the House Committee on Revenue and Taxation Monday night, February 27.

These bills are based on the theory that excess production can be readily controlled by placing a heavy tax on the production from wells which produce more than 25 barrels per day.

Representative Milton West of Cameron has introduced a similar bill three times before, and it has met with failure. Subsequently, during the recent campaign, the measure was advocated by Jas. E. Ferguson, husband of the present governor, as a substitute for the market demand statute.

The bill introduced by Representative Daniels of Crockett is not a proration bill in its present form, as it would place a flat tax of two cents per barrel on crude, replacing the present tax of two per cent of the value of the oil.

Daniels, however, is having his measure re-drafted by members of the attorney general's staff, and the revised bill will re-write the entire gross production tax law, he says.

The other three are proration measures strictly.

Representative Chastain of Eastland, like Daniels, is rewriting his bill. When presented to the committee it will call for a tax of one cent per barrel on the first 10 barrels; two or three cents per barrel up to 25 barrels, and increased to as high as 50 cents per barrel on production from wells running 100 barrels a day or more.

The bill by Representative Holloway of Longview, retains the present tax of two per cent of the value on production from wells less than 200 barrels per day, but adds 25 per cent to those producing a larger amount.

Representative Gordon Burns of Huntsville has a bill similar to that of Chastain. He does not intend to revise it. The following graduated tax is provided: one cent per barrel up to five barrels; two cents per barrel up to 10 barrels; four cents up to 20 barrels; and ultimately a tax of $1 for all production in excess of 1000 barrels.

The chief difficulty with all of these bills is that it will be almost impossible to enforce them. Every well in Texas, some 40,000, would have to be checked daily. Burns proposes the installation of a meter, which at a minimum cost of $150, would amount to more than $6,000,000. He also makes the pipe line company the collection agent, subservient to a "department of conservation" in the office of the state comptroller.

Opponents of the measure declare that it will result in reducing production in Texas to a point that will permit the importation of oil, not only from surrounding states, but from Venezuela and other foreign fields.

Proration Probe Makes Slow Progress; Approve Commission
(Continued from page 8)

Long indicated that he was interested in knowing just how the newspapers could assist in proration enforcement, and why the phone service was inadequate anywhere else in the field.

Inglish agreed that the papers could not enforce the orders. However, he said that they did much to hinder enforcement by carrying stories giving exaggerated accounts of violations taking place in the field.

In reply to questions concerning his work as an investigator, Inglish said that he inspected independents and majors alike. He stated that he reported evidence indicating overproduction by the "Shell Company," but that in general the violations by the major operators were for failures to burn flares and other technical violations of the commission orders, rather than for the illegal production of oil.

Asked why he resigned, Inglish stated that he got into an "altercation with two operators, Wrather and Manley, and then turned in his resignation," apparently for the "good of the service."

H. W. McCurley, former investigator for the commission, testified that during the time he was employed he worked industriously for the re-election of Commissioners Thompson and Terrell. He admitted he had received letters from them urging him on, and suggesting that he organize "Thompson for Commissioner" and "Terrell for Commissioner" clubs. He denied having done this, but stated that he had contributed to the campaign fund. Subsequently, he was fired.

"Don't you think that was a poor investment," Representative Long inquired.

"I do now," answered McCurley, "but I did not think so at the time."

McCurley was closely cross-examined concerning his campaign activities by John Boyles, attorney for the commission. He denied that he had taken part in any questionable activities during the campaign, or that he had used state time or state cars for this work. He said that he felt it his duty to support the men who had given him a job.

The witness testified that in his opinion some 25,000,000 barrels of excess oil had been taken from East Texas from December, 1931, until the time he left the commission. This was 57,000 barrels per day. He agreed with Long that the majors got 90 per cent of the total oil produced, but declined to comment on whether or not they ultimately obtained that percentage of the illegally produced oil which came out of East Texas.

Long attempted to prove by this witness that the major companies ultimately purchased most of the oil carried out of the state by interstate pipe lines and through coastwise shipments but McCurley was unwilling to testify on this point. He agreed, however, that he believed that much of the excess purchased by brokers found its way into the hands of the major purchasers, and that if this could be stopped, the principal outlet for illegally produced oil would be stopped. He pointed out that "oil is oil when it gets out of the state where it was produced," and indicated that he meant by this that anyone would buy it if the price was right.

McCurley readily admitted that Long was right in saying that "it would help proration if the commission would write a valid order that everyone knew was valid and legal, and which would stand in the courts, and then leave it in effect." He was unable to testify, however, as to how an order would be written that would have all of these qualifications.

Ask Cooperation Opposing Texas Crude Tax Increase

Fort Worth, Texas.—An effort to arouse interest of independent oil producers in Texas against proposed oil tax legislation has been attempted by Ed. A. Landreth, president Landreth Production Corporation, Fort Worth. A plea has been made for operators to attend a scheduled hearing to be held at Austin on the night of February 27 by the Revenue and Tax Committee of the Texas Legislature for the purpose of considering the program on oil tax legislation. Those unable to attend the hearing have been requested by Landreth to wire their respective representatives in the legislature their individual views on any further attempt to add to the tax burdens of the oil producer, else wire opinions direct to the committee.

Expect No Immediate Boom As Result of Hockley Well

Houston. — Despite much publicity given the recent discovery of John Deering on the northwest flank of Hockley, one of the oldest known salt domes in Harris County and the Texas sector of the Gulf Coast, it is not likely that the publicized "intense" play of royalty and leases in the area will lead to any serious amount of drilling.

Warren 2, Mr. Deering's discovery well which produced about 500 barrels of 39.1 gravity oil initially from 2427 feet, is located near the center of a section of land owned by Yount-Lee Oil Company, surrounds his holdings on three sides with leases amounting to about 8000 acres. Henry Staiti, veteran Gulf Coast operator, holds lease on about 1000 acres on the east side. Leases are open for trading on the north side, but there is not enough division of ownership or enough acreage to warrant prediction of anything resembling a drilling flurry.

Warren 2 produced initially through the three holes in a swab, each estimated to be equivalent to about a three-quarter inch choke. Pressure on the well never exceeded 45 pounds, according to Mr. Deering, who seems to think there is a possibility of the importance of the discovery being over rated. The producing horizon consists of eight feet of sand on bottom topped by eight feet of sandy shale showing oil.

An analysis of crude from Warren 2 shows 30 per cent gasoline, 20 per cent kerosene, 20 per cent gas oil, 29 per cent residuum, and one per cent loss. Cold test and pour test is rated zero.

Location for a second test at Hockley by Mr. Deering has been announced. His W. S. Cochran 1 will be drilled one mile northwest of the discovery well, or about 1950 feet out of the southeast corner of the J. Jordan Survey, Abstract 293.

Cratering Slow Down Development at Conroe

Houston.—Cratering may hold Conroe production in check if proration can't.

Following the initial cratering in the field on Standard of Kansas' Madeley 1 in the latter part of 1932 the malady has spread, until at present all property lying within a three quarter mile radius of the Madeley 1 and Madeley 2 wells of this operator are considered in danger.

The latest victim of cratering in Conroe is Abercrombie and Harrison's O. L. Alexander 1, completed early in December for a 3000-barrel well and promptly pinched to the per well allowable. It cratered early this month, and grappling down to 165 feet has failed to locate any of the casing. Four pumps placed at vantage points along earthen dykes thrown around the well about 150 yards from the center of the crater are picking up about 300 barrels per hour. Petroleum engineers say only time and nature can stop the flow.

The latest well to show symptoms of cratering is Abercrombie and Harrison's O. L. Alexander 2. Baroid is being pumped in the well in an effort to kill it before the pending blowout and cratering takes place.

Showers and Moncrief's R. B. Dunn Estate 2, Wilson Strickland Survey, blew out at 4470 feet on February 19. The rig was moved off, the crater being satisfied with retaining 41 fourbles of drill pipe. It bridged at 10:30 p.m. February 21, going dead.

Humble Oil & Refining Company's Madeley 11 and 28 are standing with partly drilled holes. Rigs have been moved off, waiting for Standard of Kansas' Madeley 2 to show some stability.

Some of the operators have begun to drill holes around the cratering wells and in areas effected by craters to relieve the pressure.

Two or three years of constant work at drilling such pressure relief wells to hold the withdrawal uniform may be necessary to render the areas involved suitable for drilling, it is said. Thus, Conroe may be said to hold the title of the first oil field to invoke natural proration. So far it appears more effective than that which is legislated.

Houston.—Right-of-way survey work is being carried on by Sun Oil Company for an oil pipe line from Conroe field to Sun's loading terminal near Beaumont. Construction work is pending clearing of title to certain portions of the right-of-way.

Not Yellowstone National Park. Just Showers and Moncreif's contribution to the list of cratered wells at Conroe. Their R. B. Dunn Estate 2, above, blew out February 19, cratered, went wild, and bridged to kill itself and retain 41 fourbles of drill pipe, 10:30 p. m., February 21.

North Dome Well Extends Accepted Field Limits

Coalinga, Calif.—Completion of a 4500-barrel well on the North Dome by Standard Oil Company has slightly extended the producing limits of the field and further proves the importance of the northwest end of the structure. The new producer, No. 67-19J, is located in the southeast quarter of Section 19-21-17 and is about three-eighths of a mile northwest of the accepted field line. The oil was 34 gravity and showed a negligible cut. The well was originally drilled to 8848 feet, but water developed during the first production test, and present production is coming from the top of the formation below the nine-inch shutoff at 7736 feet. Gas production was only 3,000,000 cubic feet. Such a satisfactory producer at this location is important and gives remote tests on the North Dome some hope of success. Bottom water was present, but this condition has been found in other edge wells.

Average depth of producing wells at Kettleman Hills is far greater than in any other California field. Depths range from around 7000 feet to 9000 feet, and the average is considerably above 8000 feet. Depths of 9000 feet probably will not be unusual after the upper part of the Temblor shows a decided decline. Possibility of a deeper production than has been developed is also an interesting speculation. Bottom water has been found around 8800 feet in edge tests, but inside wells may not show such a condition.

Rapid drilling of recent completions has also been a very interesting development on the North Dome. Operators now realize that footage may be made with little difficulty by observing a few simple basic rules of drilling. The 6000-foot mark has been reached in three or four wells in a very few weeks. The first wells worried along for months under a strong mental handicap. Pressures are slightly lower than in the first wells, but the difference has had little to do with an improved drilling time. Formations stand up well and the field does not present more difficult problems than should be found in other fields producing between 7000 and 9000 feet.

Sutton County Well Shows Button Willow Conditions

San Francisco.—A conservative report on the discovery of gas in Buttes Oilfield's Sutter County well, a wildcat located near Marysville, shows the possibility of a commercial gas field 100 miles northeast of San Francisco. The gas flow was estimated at 3,000,000 cubic feet, and the casing pressure was above 1400 pounds. The well was drilled to 2727 feet, and a string of perforated casing landed on bottom. The formation being tested extends from 2100 feet to bottom. No water was encountered at any depth, and a production test was a simple matter. Production is apparently coming from cracked shales above and in contact with the andesite. This condition exists at Buttonwillow, where commercial gas has been developed. The general district is marked by gently rolling hills, and resembles the gas producing sections of Rocky Mountain and Eastern states. A ready market for gas in this district is assured, but it would require construction of pipe lines to all principal markets. Location has been made for a second well. The next test will be drilled slightly deeper than the discovery well.

Navy Closes 18 Producers In Elk Hills Field

Bakersfield, Calif.—The United States Navy has plugged or otherwise shut in 18 producing wells in the Elk Hills field, and will not produce any of the wells until conditions improve, or until there is actual need for the oil. All wells are located on leases which reverted back to the government after a recent decision of the higher courts.

Newhall Gas Strike Shut In; Accompanied by Salt Water

Los Angeles.—Willetts Petroleum Company's No. 1, a wildcat northeast of Newhall which blew out a week ago and flowed gas for a time at a 10,000,000 cubic foot rate, has been killed and shut in. The gas flow is considered important, but it would have held more significance had it not been accompanied by a 5000-barrel flow of slightly salty water. The well was drilled to 1900 feet on a small structure which does not appear to be more than 1200 feet wide and 2500 feet long. The gas flow was much larger than expected by most companies, and other wells will be drilled in the district. The gas was dry, but compared favorably with dry fuel gas produced in other California districts. The well is located on Section 35-5-16, about nine miles north of the old Newhall oil field. Gas showings have been found in the area, but such a large flow was a surprise. The field is located near large gas lines, and marketing of a suitable fuel gas would be a simple matter. Present gas supply for the Los Angeles basin is adequate, but there is some doubt as to a permanent future supply. The general district has been drilled extensively, and several wells have been abandoned at much greater depths than that from which Willetts Petroleum Company's gas well blew out.

Rincon-Ocean Test to Try Pumping Higher Showing

Ventura, Cal.—Indian Petroleum Company has been unable to make Shudde 88-2, extension tideland test in the Rincon field, flow and will place the well on the pumps to test the upper zone which was ignored in other wells. The well flowed from a plugged depth of only 2080 feet, but sand and shale prevented a steady production. Gas pressure has been low, but it was enough to flow such a shallow well under similar conditions. A discovery will be established at this depth if possible. The principal producing zone should be found around 2500 feet, and the well stands a good chance to produce from the lower zone. The well is an attempt to extend the Rincon field out into the ocean about 1900 feet. It is apparently on top of the structure, but some doubt existed as to possibility of such a long extension. The location was made in 38 feet of water, and an isolated pier built for the test. The well was drilled to 2125 feet, and was plugged back to test the better portion of the upper zone.

Coring and Reaming Makes Way for Record String

Coalinga, Calif.—In coring an undersized hole, then using a special reamer to increase the size, North Kettleman Oil & Gas Company has proven the wisdom of a practice which is gaining favor in California. The company's Lillis-Welsh 1, an outpost wildcat northwest of Kettleman Hills, was successfully drilled to 9933 feet, and a string of seven-inch casing cemented at 9640 feet after reaming to exact specification.

The lower portion of the hole was cored with an 8½-inch core drill. This was followed with a reamer, which increased the size of the hole to full nine inches. The reamer was constructed so that it started reaming at a diameter of 8½ inches and increased the size of the hole to full nine inches at the top of the cutters. This slightly tapered or conical action was accomplished with a series of consecutively sized reamers in tandem. About 1000 feet of hole was made in this manner.

Drilling or coring a smaller hole than actually required and reaming to size has been done for some time, but Lillis-Welsh 1 was perhaps the deepest well in which the practice has been employed. The coring was followed by reaming to insure a uniformity of diameter and to place the hole in condition for landing a record string of seven-inch casing at 9640 feet.

Two distinct advantages have been established by the practice. It is obviously easier to core a small hole than a larger one in a hard formation, while a combination reaming and enlarging of the original hole insures a truer finished hole

than could be obtained by a single coring operation.

The long string of casing was run and cemented without trouble. The lower section of the string included 3500 feet of 36-pound casing, while the upper section included 6140 feet of 30-pound casing. The entire string was run in 25 hours.

Nine Permits to Drill Issued in California

Los Angeles.—Oil field operations reported to the California Oil and Gas Supervisor during the week show nine notices to drill new wells. This is the largest number recorded during one week for some time, and brought the yearly total up to 31, as compared with 28 at the same time last year. An unusual development was the wide distribution of new locations. Not more than one well was started in any field or district. The new wells included:

Shell Oil Company's Alamitos 40, Section 28-4-12, at Long Beach.

Universal Consolidated Oil Company's No. C-1, Section 6-2-11, at Montebello.

Macroo Oil Company's Smith 1, Section 10-6-11, at Huntington Beach.

Los Posas Oil Company's No. 1, Section 22-3-20, in Ventura County.

Mohawk Petroleum Company's Hood 1, Section 30-30-29, in Kern County.

Pacific Coast Division Oil Company's No. 1, Section 14-27-27, at Mt. Poso.

Cascade Oil Company's Cascade 1, Section 23-29-27, at Fruitvale.

Lamont Oil Company's No. 1, Section 20-26-28, in Kern County.

A. Manford Brown Kettleman City Oil & Gas Company's No. 1, Section 10-23-19.

Four Wells Completed In California Fields

Los Angeles.—Only four wells were completed or recompleted during the week in California fields, but a slightly better average should be maintained when recompletion of present workover jobs are recorded. One small gas well was completed at Buttonwillow.

Company, Well and Location	Initial Production Bbls.	Depth
Buttonwillow—		
Milham Exploration Co., S. P. 21-7	¶12	2620
Huntington Beach—		
Southern California Drilling Co., Riggle 1	100	3740
Rosecrans—		
Barnsdall Oil Co., Rosecrans 5-A	300	5917
Ventura Avenue—		
Shell Oil Co., Taylor 74	800	6365

*Failure. †Junked. ¶Million cu. ft. gas.

Increase Oklahoma Output Of Crude Made Retroactive

Tulsa, Feb. 24.—Allowable production for Oklahoma pools during March as indicated by nominations made to the Oklahoma Corporation Commission February 24 will be 466,584 barrels, of which 152,914 barrels will be allocated to Oklahoma City. Nominations for Class B pools were 122,420; class C pools17,100; Class A 172,550 barrels and wildcat pools 1600.

Increase of 93,500 barrels in daily average Oklahoma production during the past week was due principally to increased nominations in the Oklahoma City pool. As of February 20 the corporation commission issued a new order permitting Wilcox Oil & Gas Company to increase its Oklahoma City nomination 15,000 barrels daily; Wirt Franklin Petroleum Corporation an increase of 2500 barrels and Sinclair Prairie Crude Oil Purchasing Company an increase of 8000 barrels, all retroactive to February 1.

Sunray Oil Company was granted 15,000 barrels daily retroactive to February 16. Earlier in the month Stanolind Crude Oil Purchasing Company and Phillips Petroleum Company had been granted an additional nomination of 27,000 barrels daily, raising the total nomination to approximately 120,000 barrels. Increases of February 20 brought the total to 154,000 barrels daily. Through these increases purchasers will be allowed to take during remainder of the month enough oil to make up the difference created by nominations having been made retroactive.

Injunctions Get Oklahoma City Operators in Line

Oklahoma City.—Governor William H. Murray and his cousin, Colonel Cicero I. Murray, had a lively game of injunction with a group of smaller operators in the Oklahoma City pool during the week when several attempts were made to exceed allowable production as established by orders of the Oklahoma Corporation Commission. Through attorney-general J. Berry King, injunctions were secured in district court against 15 producing companies and five pipe line companies. Under authority of the court order, members of the sheriff's force shut down 41 wells alleged to have been producing in excess of February allowables. In a recent decision the state supreme court reversed a previous district court when it said that the lower court had jurisdiction in proration enforcement should render equity in such matters. It also held that use of the national guard for enforcement purposes was illegal.

Governor Murray issued a lengthy statement in which he scored the state supreme court for decision recently rendered in proration matters. Commenting on the situation he said, "It seems the courts, and especially the supreme court, in its effort to attack my administration, is willing to destroy a great industry—that of oil. The exercise of the powers of 'equity to enjoin' the military power of the governor was an usurpation of jurisdiction. The court cannot get into its head that old doctrine of Thomas Jefferson, later proclaimed by Andrew Jackson and indorsed by Stephen A. Douglas and Abraham Lincoln, that in the construction of the constitution by each of the three branches of government, each must construe it as they understand it and not as one other branch understands it; and when the court of this state undertakes to tell the executive branch or the legislative branch what their constitutional powers are it means the judicial branch will become the supreme power in the state and then the three branches cease to be 'equal and co-ordinate.'"

On Tuesday, February 21, the district court released all but two of the 23 companies against which restraining orders had been issued. The remaining cases were against Frank Russell, as an individual, and Russell Petroleum Company. Governor Murray expressed satisfaction at the outcome of proceedings.

A second major battle between the governor and other state departments was in progress during the week when a majority of the corporation commission voted to allow the taking of new potentials in the Oklahoma City pool. As originally planned, potentials were to be taken between February 1 and March 1, 1933. A subsequent order from the commission set the testing period between February 15 and March 15, 1933. Operators were then called into an open meeting to decide how potentials should be taken. No agreement was reached after a full day of argument. Small operators contend that potentials should be taken only by flowing wells wide open or as nearly wide open as they may be safely produced. The major group contend that potentials should be based on bottom hole pressures. At the height of the argument Governor Murray stepped in and ordered that no potentials be taken until such time as the legislature has been able to put through a new oil and gas conservation law. Commissioners E. R. Hughes and J. C. Walton believe that potentials should be taken now in disregard of the governor's "request."

Two Seminole District Tests Showing for Production

Tulsa, Oklahoma, Feb. 24.—Watchorn Oil & Gas Company's Zoeller 1, NW NW SE Section 5-6n-5e, approximately 2½ miles east of South St. Louis pool, topped Viola limestone at 4043 feet and had pay from 4110 to 4112 feet where it swabbed 408 barrels the first 10 hours, lowering fluid to within 1000 feet of bottom. The well was then shut in and reopened the next day when it was found to have 3200 feet of oil in the hole and swabbed at the rate of 80 barrels the first hour. Operators planned on filling two 500-barrel tanks and shutting in for 15 days as provided by proration regulations. Total depth is 4120 feet in Simpson dense formation. Compared to the Robinson and Hicks Crouse 1 in Section 5-6n-5e, it is 96 feet structurally high and is only six feet lower than the Magnolia Billington in Section 36-7n-4e. Paleontologists say that the pay streak is strategraphically higher than in the South St. Louis pool which also produces from upper Simpson.

A second field report of importance came from Carter Oil Company et al's Community-Keokuk 1, center north half NW NE Section 2-10n-6e, approximately six miles northeast of the old Searight pool in northern Seminole County. Operators cored Misener sand from 4094 to 4100 feet and had four joints of oil on a drill stem test. The sand is said to be well saturated and is structurally high enough to make a producer.

The block of approximately 5000 acres is owned largely by Carter, Gypsy and Sinclair Prairie Companies.

One Drilling, 3 Locations Spotted in Wentz Pool Area

Tulsa.—Stanolind Oil & Gas Company et al's Bolay 1, CSW NW Section 16-20n-2w, three fourths of a mile east of the discovery well of the Wentz pool, was drilling below 1575 feet with no markers yet reported; Sinclair Prairie Oil Company's Jerome 1 was building rig a half-mile south and slightly over 1½ miles east of the discovery well; Shell Petroleum Corporation et al's Whitton 1, CSE SE Section 7-20n-2w, is a location offsetting to the west the same operators' Jerome 1; and Shell Petroleum Corporation et al's Farr 1, CNE NE Section 19-20n-2w, is a location three fourths of a mile southwest of the discovery well. The three producing wells in the new field fall practically on a northwest-southeast line which is thought to parallel the crest of the structure. Correlations based on these wells, however, do not indicate definite location of the structure and any tests off the northwest-southeast line will be of special importance. It is entirely possible that all three producing wells are on the edge of structure or that they have encountered Wilcox sand on the ragged edge of a contact as is the case with many wells in the Oklahoma City pool. In either event there remains a possibility that big production may be encountered off the alignment of the present producers.

Shell Petroleum Corporation's Jerome 1, CSW SW Section 8-20n-2w, second well to find production in the pool, has been plugged back to 5255 feet. A production test after the well had been closed 12 hours revealed no water. It is located slightly over a half-mile northwest of the discovery well. Stanolind Oil & Gas Company et al's Kolb 1, CNE NW Section 33-20n-2w, approximately three miles southeast of the discovery well, produced 732 barrels on one test and 618 barrels on another. Operators were tearing down tools.

In Garfield County, Continental Oil Company's Thompson 1, NW SW SW Section 7-24n-4w, was rigging up rotary tools.

In Pawnee County, Deep Rock Oil Corporation et al's Crow 1, NE NE SE Section 26-23n-5e, was fishing at 3082 feet, and O. M. Mainess' Schildberg 1, NW SW NW Section 27-22n-6e, was shut down for 10-inch casing at 1135 feet.

In Creek County, O. O. Owens' Fee 1, NWc Section 23-15n-7e, was fishing tools at 3170 feet; Sinclair Prairie Oil Company's Tebe 1, SW SE NW Section 29-14n-7e, was setting surface pipe.

In Oklahoma County an old wildcat test, L. C. Hivick's Sunset 1, (Block 20), NW SW NW Section 17-11n-3w, which was drilled to 5515 feet and shut down, after which rig was moved out in August of 1930, was finally abandoned.

In Beckham County, Pattee Royalty Company's Goose Tree 1, SW SE SW SE Section 32-10n-23w, was shut down at 2010 feet.

In Caddo County, Denver Producing & Refining Company's Noe 1, NW SW SW Section 34-10n-10w, was drilling below 5200 feet.

In Seminole County, Carter Oil Company et al's Community-Keokuk 1, CN½ NW NE Section 2-10n-6e, cored sand at 2674 to 2677 feet, finding it dry, broken sand at 2905 to 2925 feet, and was drilling in broken lime at 3611 feet; Donley et al's Shepard 1-B, SE SE NE Section 4-8n-8e, was still fishing tools at 1640 feet; Stanolind Oil & Gas Company, Amerada Petroleum and Indian Territory Illuminating Oil Company's Palmer 1, NWc Section 36-6n-7e, tested sand at 2862 feet finding 300 feet of oil in hole, now drilling below 3029 feet in shale.

Hershall-Payne's Lovelace 1, in Pottawatomie County, CSW SW NW Section 27-6n-4e, was rigging up rotary.

In Hughes County, Nash Redwine's Ellis 1, CNW NW Section 9-5n-11e, was rigging up machine, and the same operators' Uri 1, CNE Section 10-5n-11e, was declared dry and abandoned at 1600 feet, after having encountered sand at 1235 feet to 1244 feet with 250,000 feet of gas, and dry sand at 1490-1515 feet.

Reports from Pontotoc County were as follows: Blackwell Oil & Gas Company's Abbott 1, NW SW NE Section 14-4n-6e, pulled six-inch casing and were recementing eight-inch; Gilbert et al's Starritt 1, NW NW SE Section 28-4n-6e, was a machine; a new test, which although it is only a little over a quarter-mile from a three-barrel well drilled in 1928, is considered a wildcat, Hughes et al's Norris, CNE NE SE Section 28-4n-7e, was a machine; Williams et al's Kroth 1, NE NE SE Section 33-3n-4e, was drilling below 1565 feet; H. L. Wirrick's Fee 1, SE SW Section 29-2n-7e, was still a location; Delaney's Hardin 1, NE SW Section 30-2n-7e, had 13,250,000 feet of gas at 1171 to 1176 feet; Choctaw Oil & Gas Company's Thompson 1, SW NE SW Section 1-1n-7e, was rigging up machine.

In Pittsburg County, Independent Oil Company's Dallas James 1-A, CNE NE Section 28-2n-15e, had sand at 371 to 426 feet, total depth 429 feet, completed for five barrels of oil.

Southern Oklahoma

In Marshall County, Lee Cross' Hamlin 1, SE SW SW Section 26-6s-5e, was shut down at 900 feet and a new test was announced. Abbott et al's Simmons 1, NWc Section 13-6s-6e, a machine. Thomas et al's Setliff 1, in the same county, SW SE SE SW Section 36-5s-6e, was shut down at 90 feet for five-inch casing.

Reports on the two tests in Tillman County in southwestern Oklahoma were: Emenhiser et al's Pace 1, CSW Section 3-4s-17w, shut down at 40 feet; Gypsy Oil's Pitcher 1, NWc Section 26-4s-15w, was drilling at 1503 feet in red bed.

In Atoka County, L. E. Stewart et al's Stewart 1, SEc NE Section 2-4s-10e, was drilling below 1260 feet in shale and lime.

In Stephens County, Bridwell Drilling Company's Weldon 1, NE SW SW NE Section 12-3s-8w, was drilling below 1835 feet.

In Carter County, E. M. Boring et al's Morgan 1, CNE NW SW Section 4-1s-3w, had rig up and was moving in tools.

Oklahoma Stripper Owners Organize to Oppose Tax

Nowata, Okla.—Approximately 250 owners of stripper wells in northeastern Oklahoma met here on Monday evening, February 20, to form the Northeastern Oklahoma Stripper Well Association. Direct purpose of the association is to fight exorbitant and confiscatory tax levies provided in measures now pending before the state legislature. Members of the association represent ownership of approximately 30,000 small oil and gas wells in Tulsa, Osage, Nowata, Washington, and Rogers Counties. Many of these wells produced less than a half-barrel daily and the average probably does not exceed a barrel daily.

Clarel B. Mapes, assistant secretary and technologist for Mid-Continent Oil & Gas Association, told members that if all taxes were applied to a typical lease in the area the operator would receive $34.79 gross profit per well but would be forced to pay back, in the form of taxes, $69.61 per well, based exclusively on total income and total tax. Mapes also presented figures to show that during 1931 the oil industry of Oklahoma lost 48 cents on every barrel of oil produced without consideration of financing charges. Including these charges Mapes said the loss was 65 cents per barrel, or an aggregate loss of approximately $101,595,286 for 1931. Losses he said during 1932 were expected to run even higher.

H. G. Ellis, general manager of Wiser Oil Company, was elected president of the stripper well organization, along with W. W. Warner of Warner & Calfwell, secretary-treasurer. Members of the executive committee include: Bartley Milam of Milan & Phillips, Chelsea; J. Wood Glass, attorney and independent operator, Nowata; G. I. Van Dall, independent operator, Bartlesville; T. R. McSpadden, general manager for Henderson Oil Company, Nowata; I. L. Dunn of Dunn & Lewis, Tulsa; Howard Whitehill of Whitehill Oil Corporation, Tulsa; M. B. Shufflin, independent operator, Coffeyville, Kansas; O. C. Harmon of Harmon and Whitehill, Nowata; and G. S. Curban, independent operator, Bartlesville.

Oklahoma Completion List Includes Only 12 for Week

Tulsa.—Twelve completions resulted 1764 barrels of new oil production and 110,000,000 cubic feet of gas during a comparatively quiet week in Oklahoma areas. Included in the list were five dry holes and one abandoned location. Watkins-Shaffer et al's L. Jacobs 1, NE SW NE Section 16-7n-8e, in the Wewoka-Holdenville pool of Hughes County, was the outstanding completion with an initial gauge of 98 barrels of oil in four hours and gas at the rate of 90,500,000 cubic feet.

Company, Well and Location	Initial Production Bbls.	Depth
Carter County—		
Magnolia Pet., W. Hooks 2, nw sw sw 13-1s-3w	*	2681
Tubbee 8, nw ne se 24-4s-3w (owdd)	5	1846
Creek County—		
F. Patrick et al, M. Cat 1, se c sw 31-16n-9e	*	3090
Whitten, Norman 1-A, cn½ nw se 8-18n-12e .....¶2½		1513
Hughes County—		
Watkins-Shaffer et al, L. Jacobs 1, ne sw ne 16-7n-8e, 4 hours .....¶90½-98		....
Jefferson County——		
O. V. Beck, Seay & W. Seay 4, ne sw se 34-6s-5w	116	1617
Kay County—		
Harris & Haun, Cole 3, ce½ se 18-29n-1e	¶17	2660
Noble County—		
Magnolia Pet., Young 1-A, ne nw nw 22-21n-2w (owd)	286	5128
Okmulgee County—		
Iron Mountain, Rinehart 4, nw ne ne 4-15n-11e	12	2053
Paraffin et al, Cowan 5, se se sw 26-16n-11e	20	1834
Klingensmith, Farr 6, ne ne nw 35-16n-11e	30	1834
Osage County—		
Lewis Production Co., 2, sw ne se 28-24n-7e	55	2604
Pittsburg County—		
Ruby Ann Oil, McCarty 1, sw sw ne 6-6n-14e	*	....
Pontotoc County—		
W. C. Hughes, Fee 1, sw se ne 28-4n-7e	*	500
Benedum & Trees, Starritt 1, sw nw sw 28-5n-5e	218	2360
Pottawatomie County—		
Magnolia Pet., Brister 1, swc ne 28-7n-4e, 12 % water..	434	4199
Stephens County—		
Wilie et al, Cates 1, se nw sw 15-1s-8w	*	2200

*Failure. †Junked. ¶Million cu. ft. gas.

Oklahoma Permits Call for Work on Short Term Leases

Tulsa.—Scout reports from 10 Oklahoma counties showed 15 new starts, two of which were old wells being rigged up to drill deeper. Oklahoma areas have been slumping during the past two weeks due to uncertainty of the industry's immediate future. Most of the new work being announced is on short term leases or in cases where offset production forces drilling.

Two locations and one rig on ground were reported in Creek County. Sherry-Murta and others No. 1-A Thompson, SW SW NE Section 36-17n-11e, was a location. Shamblin et al's Gunn 1, SE SW SE 8-14n-8e, was a rig on ground, and E. L. Robinson's Saab 2, SWC NE Section 3-18n-8e, was a location.

In Jefferson County, O. V. Beck announced the location of his Wilmer Seay 3, SE NW SE Section 34-7s-5w.

In the northern part of the state, in Kay County, Blauner et al's Maple 1, NE NW SE Section 20-27n-4e, was a location.

In Noble County, Mid-Co Petroleum's Washburn 16, NW SE SW Section 15-23n-2w, was an old well rigging up to drill deeper from 2677 feet.

One new well was reported in Oklahoma County, Hugh Hodges et al's Burroughs 1, SE SE SW NW Section 10-11n-3w, a rig.

In Osage County, correction is made on the location of A. H. Kasishke et al's 1, SE C NW Section 24-24n-7e, drilling below 150 feet, formerly reported NE C NW. Lewis Production Company's No. 2, SW SE NE Section 28-24n-7e, was building rig, and Sinclair Prairie Oil Company's No. 1, SW NW SW Section 22-25n-5e, had its rig up.

Three first reports from Pontotoc County were as follows: Hughes No. 1 Norris, CNL NE SE Section 28-4n-7e, machine; Patsy's Burk 2, NE C SE Section 25-5n-4e, a rig; Texhoma's Butler 1, SE SW NW Section 21-5n-8e, a location.

In Pottawatomie County, Reynolds et al's Swan 1, SE SW SE Section 36-7n-4e, was a cellar.

First report was made of an old well drilling deeper in Seminole County, Tidal Oil's Lasley 1, NE C SW Section 19-9n-6e, drilling below 4130 feet from an old total depth of 4117 feet.

In Tulsa County, Burton & Holmes' Littleton 1, CSW NE Section 19-19n-11e, was rigging up.

New Location in Kansas Involves Luham Area Test

Wichita, Kansas.—One of the most interesting of the nine Kansas first reports was that of Krueger et al's Rathburn 1, SE NW SW, Section 14-9s-16w, approximately one-quarter mile southwest of a 3340-foot dry hole in the old Luham area of southeastern Rooks County.

First development in the area was in 1926 when Vickers and Krueger completed Luham 1, SWc SE, Section 11-9s-16w. This well made 250 barrels initially from a total depth of 3320 feet.

About a year later Takenhurst et al completed Krueger 1, SEc SW, Section

11-9s-16w, making 175 barrels initially. Since that time seven dry holes have been completed at depths ranging from 3340 to 3655 feet.

In Barton County, Noble Drilling Company and Stanolind Oil & Gas Company's Grant 1, CSW SW Section 4-20s-11w, had its rig on ground.

In Ellsworth County, J. A. Aylward and others' Stratman 6, SW SW SE Section 1-17s-10w, was a location; and in the same county, Continental Oil Company's Phelan 1, NE NE NW Section 12-17s-10w, also was a location.

A location was announced in Greenwood County for Rex-Phillips' Boles 1, SE SW SW Section 10-22s-12e.

In McPherson County, Mylius and others Gegier 2, NE SE SW Section 16-21s-3w had its slush pond completed.

Location was announced in Reno County for Sinclair Prairie Oil Company's Base 1, CSW SE Section 26-23s-4w.

In Rice County, Rodgers and others' Reinet 4, SE NW SE Section 3-21s-6w, also was a location.

In Sedgwick County, Carter Oil Company announced the location of its Rowley 1, CE½ NE NE Section 30-25s-2e.

Kansas Completions Again Reach New Low Level

Wichita, Kansas.—Failure of Kansas operators to step out with new work during the past month is now being reflected in the number of completions reported from the state. During the past week the record shows three producing wells, one abandoned location, and three dry holes. This compared with 11 for the previous week when new production hit its lowest plane in many months. Completions of the week were as follows:

Company, Well and Location	Initial Production Bbls.	Depth
Ellsworth County—		
Olson Oil et al, Brock 1, csw sw 17-14s-10w	*	3238
Harvey County—		
Phillips Pet., Warkentine 2, nw sw sw 20-22s-3w	*	3675
Turner-McBride, Regen 1, nwc se 30-22s-3w	*	3747
McPherson County—		
Mid-Kansas, Schmidt 1, ne se nw 33-21s-3w	1196	3477
Lario O & G, Miller 3, sw se se 24-19s-2w	*	....
Reno County—		
Olson-Shell, Vogt 1, cse ne 26-23s-4w	¶1-12	3376
Rice County—		
Hipple et al, Reinet 2, sw ne se 3-21s-6w	720	3381

*Failure. †Junked. ¶Million cu. ft. gas.

Acreage Probably Will Be Basis of Next Eastex Order

Tyler, Texas.—Contenders for the use of acreage as one of the factors to be considered in distributing allowable production among leases in the East Texas oil field will apparently have their wishes granted when the Texas Railroad Commission writes its next order. Recognition of the number of productive acres supporting one or more wells on a property in arriving at the proration allowable was attempted one year ago when there were only 706 separate companies, operators and individuals, and 1980 producing leases bearing 4352 oil wells, as a means of stifling unnecessary drilling. It was tried again December 10 but was successfully resisted by the small property owners, who broke ranks from proration observance and forced a temporary shutdown order on all production.

Use of the acreage factor was partially sought after by the owners of large tracts as a means of preventing uneconomic drilling. They failed in their efforts to induce the commission to make use of the acreage factor, and the resultant premium placed on small producing leases and high well density caused the number of completed wells to double by the first week in November.

A distinct advantage to the operator choosing to crowd in additional wells has been maintained by the commission through its current proration regulations. This condition has boosted the number of wells to more than 9700, while the total number of participating companies and operators has increased to more than 1000. This unexpected heavy gain in participants was primarily due to the wholesale policy of splitting up leases to make room for late arrivals into the field, and more wells.

Operators making the federal court fight on the commission's actions stressed the alleged unfairness of the order that permitted a single acre bearing one well to earn an equal allowable with a well occupying the center of a 20-acre unit, which was then the prescribed minimum well spacing on large tracts, with no recognition given the differences in lease costs.

During the course of the court trial the members of the commission hurriedly convened to amend the legal well spacing to one well to 10 acres in the field. This change will necessitate some of the lease owners drilling a number of additional wells in the event the next proration order gives prominent consideration to acreage as well as other factors, using less than 20 acres as a unit.

Credited with having 114,000 acres of producing territory, the East Texas field has been drilled up to an average of 11.75 acres to the well. The well density will eventually decline to 10 acres to the well, or less.

An average of one well to 13.69 acres has been drilled by the 24 largest lease owners in the field. They have 5789 wells

Largest Lease Owners in the East Texas Field

Company—	Productive Acreage	Total Producers	Average No. acres Per Well
Humble Oil & Refining Co.	14,652	977	14.99
Gulf Production Co. et al	7,872	631	12.47
Sinclair Prairie Oil Co.	6,261	485	12.91
Magnolia Petroleum Co.	4,883	435	11.23
Sun Oil Company	4,732	322	14.69
Atlantic Oil Prod. Co. et al	4,618	370	12.48
Stanolind O&G Co.-Pure et al	4,515	283	15.95
Mid-Kansas Oil & Gas Co.	4,490	278	16.15
Shell Pet. Corp.	4,385	335	13.09
Tide Water Oil Company	4,023	317	12.69
The Texas Company	3,049	191	15.96
Arkansas Fuel Oil Co.	2,531	178	14.22
Yount-Lee Oil Co.	2,435	178	13.68
H. L. Hunt Prod. Co.	2,260	149	15.17
Empire Gas & Fuel Co.	1,198	97	12.35
American-Liberty Oil Co.	1,396	76	18.37
East Texas Oil Ref. Co.	1,368	104	13.15
Amerada Pet. Corp.	1,005	78	12.88
Simms Oil Co.-Frank Buttram	964	59	16.34
Houston Oil Co. et al	810	74	10.95
California Pet. Corp. (Ven.)	577	44	13.11
Barnsdall Oil Co. et al	545	58	9.39
Superior Oil Co. (Cal.)	366	35	10.46
British-American O. P. Co.	335	35	9.57
Total for 24 companies	79,270	5789	13.69
Miscellaneous companies	34,730	3911	8.88
Total	114,000	9700	11.75

on 79,270 acres, or 69.53 per cent of the total acreage.

The remaining 34,730 acres, or 30.47 per cent of the total, have an aggregate of 3911 wells, making an average of one well to 8.88 acres. This minority portion of the field is operated by approximately 976 companies, partnerships and individuals, who will be penalized as a group on their production allowables should acreage be allowed to play an important part in determining individual lease quotas under the new proration order that is expected to be released shortly.

The accompanying table showing the estimated amount of productive acreage, total wells and density of drilling indicates that all but two of the largest lease owners have not developed their properties to the extent of one well to 10 acres, as authorized late in January.

Insurance Companies Ready To Quit East Texas Risks

Kilgore, Texas. — Damaging fires at frequent intervals among the crude refineries operating in and near the East Texas oil field is causing some of the insurance companies to consider discontinuance of this class of business. Panama Refining Company's 750-barrel skimming plant near Kilgore was badly damaged by fire on the morning of February 23, but the owners have announced that it will be re-built shortly. Other plants experiencing fires includes: East Texas Oil Refining Company's Longview unit, Gladewater Refining Company (now Texas Oil Products Company), and Unit Refining Company.

Ground is broken for one or two additional crude skimming plants in the field each week, and indications are that the number will continue to increase as long as an abundant supply of cheap crude is made available. Roy I. Davis et al have started work on a plant in Gregg County about one mile west of Camps Switch and on the Texas & Pacific Railroad. C. A. Heartfield, Shreveport gasoline dealer, has organized Hart-Field Refining Company, to operate the 300-barrel plant being erected near Kilgore. Union Refining Company has been organized by Harry J. Strief, Wichita Falls, and other officials of Primrose Refining Company, with headquarters in the Wilson building, Dallas, for the purpose of erecting a refinery in East Texas, but construction work has been deferred pending the release of the next proration order. Recla Refining Company began operating last week at part capacity its 150-barrel capacity skimming plant on the Bradford farm, Joiner area.

Small Wells Show Up in East Texas Completions

Tyler, Texas.—Four small oil producers were included in the list of 35 completions credited to the East Texas field during the past week. The wells lacking in prolific production were scattered along the east edge of the structure in Rusk and Gregg Counties.

Humble Oil & Refining Company contributed two of the small producers in developing edge leases in the Joiner area. Its S. A. Glover 4, T. H. Smith Survey, logged broken sand and lime at 3696-3761 feet, but failed to flow when given swabbing test. M. A. Neal 2, located on 64-2/3-acre lease, T. H. Smith Survey, also failed to flow after being swabbed from broken pay formation at 3640-3730 feet. Delano Oil Company's (was W. W. Caves) Neal Cooper 1, located on 10-acre lease, I. G. Parker Survey, pumped 25 barrels of oil on 12-hour gauge from broken sand at 3543-3640 feet.

Completions for the week follow:

Company, Well and Location	Initial Production Bbls.	Depth
Joiner Area—		
American-Liberty Oil Co., J. E. Strickland (103-ac) 4-B	1500	3627
Delano Oil Co. (was W. W. Caves), Neal Cooper (10-ac) 1	50	3640
Florence Oil Co. (was Wallace), M. T. Cole 1	7500	3777
Humble O&R Co., S. A. Glover (58-ac) 4	100	3761
J. R. Lindsey (45-ac) 4	11,000	3788
M. A. Neal (64-ac) 2	100	3730
Clayton Young (33-ac) 2	9500	3690
Mid-Kansas O&G Co., Kangerga 10, Acct. 1	7000	3661
Jim Lunsford (71-ac) 5	8000	3702
Sun Oil Co., W. H. Hodnett-Melton (176½-ac) 3	5500	3670
The Texas Co., W. W. Henry (229-ac) 14	6500	3674
Ward Oil Corp. et al, C. C. Giles (41½-ac) 6	3000	3790
Kilgore Area—		
Arkansas Producing Co., I. Adkins (9-ac) 4	7000	3659
Burk Royalty Co., D. Carr 1	5000	3530
Galvez Oil Corp., M. L. Strong (53-ac) 2	7500	3744
Gulf Prod. Co., C. E. Christian (99-ac) 9-B	10,000	3667
Rosa Russell (40.72-ac) 6	10,500	3592
A. Spear (183-ac) 21	9600	3547
Horseshoe Lease Synd., W. P. Brightwell (4-ac) 2	11,000	3684
Humble O&R Co., L. D. Crim (907-ac) 79	8500	3594
Magnolia Pet. Co., John Radford (252-ac) 7	8500	3730
Sinclair Prairie Oil Co., A. A. King (337-ac) 30-B, Tr. 1	9500	3470
Longview Area—		
A. P. Carr et al, G. W. Richey (10-ac) 2	8500	3543
Harry W. Elliott et al, W. H. Reed (16-ac) 2	3500	3714
Gulf Prod. Co., J. C. Judge (518-ac) 34	9000	3524
Humble Oil & Ref. Co., W. R. Hughes (185-ac) 19	8000	3661
H. M. Lawrence (164-ac) 10	10,000	3622
E. W. Smith (51-ac) 4	5000	3663
I. D. Smith (245-ac) 17	9600	3666
B. K. Isaacks, Rec., Virginia O&R Co., T. B. Harris 1-B	8000	3545
Magnolia Pet. Co., Howard Hampton (169-ac) 12	9600	3667
J. H. Massie et al, M. Fenn (28-ac) 5	9500	3662
H. W. McGee et al, M. O. Sheppard (31-ac) 2	9000	3542
Ray Drl. Co. et al, A. H. Tubbs (51-ac) 5	750	3607
The Texas Co., T. W. Lee (210-ac) 13	11,000	3569

•Failure. †Junked. ¶Million cu. ft. gas.

E. Texas Wildcats Resume After Prolonged Shutdown

Tyler, Texas.—Two wildcats in East Texas started in April, 1931, have resumed drilling after a prolonged shutdown, and both were drilling and coring in the lower section of the Taylor shale formation, or between the Pecan and Austin chalk horizons. L. R. Barton et al's C. L. Hubbard-Nixon 1, on 510-acre tract, M. J. Cardena survey, Van Zandt County, was drilling shale at 3395 feet. In Smith County, the wildcat of M. M. Rowan et al, on the Gibbons Manufacturing Company fee, Jose M. Garcia Survey, Abstract 368, was coring shale at 3580 feet.

Interest in Woodbine Belt Wildcats Continues Decline

Tyler, Texas. — Wildcat activity in the Woodbine sand belt of East Texas continues to shrink in volume, and very little enthusiasm prevails among the operators as to the prospects of the comparatively few tests actually underway.

A single completion last week resulted from the abandonment of Roy E. Anderson et al's wildcat on the A. Y. Breckenridge tract, Bowie County, after making salt water on drill stem test at 3032-3043 feet.

In Anderson County, McAlister-Barclay et al's J. C. Beard test on 62-acre tract, J. Trimmer Survey, standing after testing dry in Wilcox sand 1518 feet.

The •Bowie County test of Roy E. Anderson et al on A. Y. Breckenridge 464-acre farm, M. Dykes Survey, had Pecan chalk at 1362-1805 feet, with elevation of 352 feet, abandoned after

testing salt water at 3032-3043 feet. Tom Bell, W. J. Dobbs & Fred S. O'Neill's Mrs. T. M. Moss (465-acre) 1, O. D. Watson Survey, with elevation of 305 feet, topped Nacatoch sand 1135 feet, now standing at 2900 feet.

In Cass County, T. H. Pardoe et al's S. A. Orr 1, on 316-acre tract, G. W. Morris Survey, is rigging up.

In Cherokee County, H. D. Hamilton & J. C. Haynes' (Saranac Oil Co.) P. E. Jones (132-acre) 1, J. D. Hamilton Survey, rig for shallow test. Loring Oil Company's F. M. Swearington 1, on 55-acres, Oliver Lund Survey, topped Pecan chalk 3592 feet, and Austin chalk at 4620-4860 feet, with elevation 387 feet, and tested salt water in Woodbine sand 4913-24 feet, fishing drill stem in shale 5005 feet.

The Franklin County test of White Oak Oil Company on O. C. Clanton 82-acre tract, S. McCreary Survey, cemented surface pipe.

The Freestone County test of Clyde Creighton & Co. on the W. A. Holley 80-acre tract, topped Pecan at 3105 feet and Austin 3830 feet, now idle 4120 feet.

In Henderson County, H. H. Myers et al's M. E. Olson (80-acres) 1, Geo. Wilson Survey, logged Pecan chalk at 3070-3245 feet, with elevation of 512 feet, idle in shale 3907 feet.

In Hill County, C. E. Grooner & Rose's M. Holderman 1 on 35-acre lease, C. Sullivant Survey, is drilling shale at 950 feet.

In Kaufman County, Elzy, Bentley & Brewer's J. B. Hunter 1, R. Sowell Survey, is a rig.

In Leon County, Shell Petroleum Corporation, Penn Oil Company, J. R. Black et al's Wm. Phillips (164-acres) 1, E. A. Swayze Survey, logged Pecan chalk at 4135-4181 feet, and Austin chalk at 4841-5570 feet, with elevation of 423 feet, no show oil or gas below 6157 feet, coring 6285 feet.

In Red River County, The Ajo Oil Corporation's Nichols-Daniels 1 on 880-acre tract, Hugh B. Shaw Survey, is a location. Concord Oil Company's J. R. Dellahunty 1, I. Moore Survey, set six-inch pipe with packer at 2270 feet, total depth 2830 feet. L. G. Priest et al's R. W. Peek (220 acres) 1, Abram Wagley Survey, is shut down at 1300 feet.

In Rusk County, Geo. F. Hudson et al's J. H. Phillips 1 on 148-acre tract, N. Villareal Survey, is idle at 2025 feet. Jordan & Ramsey's L. W. Prior (53-acre) 1, Walker Pettit Survey, is a rig. Malone, Cararas & Edwards test on the J. S. Williams 60-acre tract, J. Crawford Survey, is rigging up. B. F. Wiley et al's J. L. Gary 1, on 200-acre tract, J. L. Mora Survey, is a location.

In Upshur County, Newsom & Orr's D. J. Smith 1, J. R. Davis Survey, topped Pecan chalk at 2345 feet, with elevation of 310 feet, is fishing at 2680 feet. Trans-American Oil Company's S. P. Williams 1 on 2500-acre tract, Estevan Moro Survey, is a location.

In Wood County, the Wood County Oil & Gas Company's test on the Guy Davis tract, John R. Clute Survey, is inactive at 4390 feet. Hull & W. B. Saulsbury's test on the T. H. Peterson 320-acre tract, W. B. McNutt Survey, preparing to resume drilling at 2850 feet.

Gulf, Humble Each Starting Tests for West Texas Ordovician

San Angelo, Texas.—The Ordovician lime horizon is to be the goal of a deep test being started by Gulf Production Company near the center of its 20,000-acre producing leasehold centering on the McElroy ranch in Crane and Upton Counties. This is the second deep test authorized within a month by a major company for the purpose of exploring the oil and gas possibilities of the Ordovician, which has heretofore been found productive only in the Big Lake field, where 12 wells have drilled to the 8483-9020-foot pay zone.

J. T. McElroy 103, CNW SW Section 197, Block "F," GCSDRG&NG Ry. Survey, Upton County, has been designated by Gulf Production Company for its deep test. Other wells on this section now flowing from the 2800-foot lime are credited with being the highest on structure, and this fact probably had some bearing on the selection of the above location. Preparations are being made to drill to the 8500-foot level, if necessary, using a company owned rig formerly used in deep drilling on the Gulf Coast.

Humble Oil & Refining Company is also moving in a heavy rotary to drill an Ordovician lime test on a 12,000-acre wildcat block in Pecos County, and about seven miles due west of the Yates field. This location was announced several weeks ago, having been located on the White & Baker ranch, CSW Section 44, Block "Z," T.C. Ry. Survey. The company will use its own rig and crew, with expectations of drilling to about the 8000-foot level.

Contractors are performing all the drilling work in the Big Lake field, where six Ordovician lime tests are underway, with work-over and deepening jobs taking place on two of the old producers. A flat price per foot is paid for this work to the producing zone, then the day rate applies. Two wells are ready to drill in. Big Lake Oil Company's University 8-C cemented 7⅝-inch casing with 900 sacks at 8243 feet, with a total depth of 8286 feet, and is to drill in with the Hydrill rotary table. Group One Oil Corporation's (Continental Oil Company) University 6-B is ready to drill out plug after cementing 7⅝-inch casing with 750 sacks at 8067 feet and seven inches, with a total depth of 8275 feet. The latter logged first Simpson at 8145 feet, and the top of the Dolomite at 8195 feet.

Crockett County

An acid bath is scheduled to be given the Ordovician lime test in Crockett County of Stanolind Oil & Gas Company and other units members on the J. S. Todd ranch in hopes of making an oil producer. This apparent failure flowed sulphur water when swabbed down February 11 at a total depth of 8041 feet, and plugged back with cement to 7746 feet. The lease on which it was drilled would have expired February 23, but the completion of a flowing oil well February 10 in shallow lime at 1460-61 feet by Stanolind Oil & Gas Company et al's Todd 1-A, Section 28, Block "WX," perpetuated about 3000 acres of the original 4000-acre unit block. Todd 1-A pinched in to 40 barrels of oil daily.

A half-mile west extension to the Settles-Edwards 2200-foot lime area on the Glasscock-Howard County line has been accomplished by the Llano Oil & Development Company of Llano, Texas, even though its W. P. Edwards 1, SEc Section 17, Block 33, T-2s, is offset to the east by an apparent failure. Edwards 1 pumped 40 barrels of oil during the first 30 minutes, then averaged 20 barrels hourly for six hours from lime at 2177-2179 feet, with an elevation of 2554 feet. Noel T. Lawson et al's Edwards 2-B, an east offset, was not as successful in that it began showing water at 2189 feet, with a surface elevation of 2558 feet, and in drilling to 2250 feet filled 1600 feet with fluid, estimated about one third oil.

A third Delaware lime test for northwestern Ward County is to follow the pooling of a 2500-acre block situated south of the lone wildcat producer owned by Shipley Oil Corporation, D. Harold Byrd, H. A. Harmon et al on the Lee Monroe ranch. Monroe 1, located in the west corner of Section 3, Block 1, W&NW Ry. Survey, was completed 12 months ago flowing 40 barrels

daily after shot in Delaware lime, with a depth of 4673 feet. The new test is to be about a half-mile south of the producer, and will be drilled by Byrd-Harmon-Harper-Simms Oil Company et al. Plains Production Company and Simms Oil Company's Benton 1, located north of the producer, failed to produce and was plugged last August at 4825 feet.

Another Shallow Pool Is Opened in Archer County

Wichita Falls, Texas.—The opening of a second shallow oil field in southern Archer County within two months is credited to D. L. Wolf of Olney, Texas, and associates. Their W. F. Andrews 1, located near the northeast corner of the southwest quarter of Section 1399, T.E.&L. Survey, and nearly a mile from nearest production, is rated at 50 barrels oil daily on pump from sand at 890-895 feet. Rig has been moved over to drill a second test on the tract. Wolf et al's R. D. Andrews 1, located near northeast corner of northwest quarter of Section 1807, and about 1½ miles northwest of the above strike, made a 25-barrel pumper from sand at 853-864 feet in opening a new pool late in December, 1932.

A quarter-mile east extension to shallow oil production in northwest Jack County was attained last week when the Root Drilling Company's Coleman-Leach 1, Section 1, S. P. Ry. Survey, cored sand at 530-537 feet, and the hole filled with oil over night. A commercial pumper is assured.

The outpost test of Henson-Tidwell and Lindsay Drilling Company on the G. M. James tract, located in northern Young County and east of New Castle, developed only a small show oil and gas in lime at 3871-79 feet, and was drilling ahead below 3900 feet. Top of the gray lime was logged at 3838 feet, with a surface elevation of 1131 feet. This test is located in the southwest corner of the southeast 40-acres of Section 457, T.E.&L. Survey, and is trying for an east extension to the deep area opened up in July, 1929, by G. A. Horal et al. Further to the east and in virgin territory, The Texas Company's E. L. Burns 1, Section 1986, is drilling below 5090 feet and flowing from 25 to 27 barrels oil daily from lime passed up at 4109-4122 feet. It has been deepening and flowing by heads since last August.

A combination of unfavorable weather and discouraging crude prices lately cast their reflection on the number of completions recorded in the North Texas district last week. Completions were confined to Archer and Young Counties, and they included two small pumpers and three dry holes.

The list of completions for the week follow:

Company, Well and Location	Initial Production Bbls.	Depth
Archer County—		
J. J. Moran et al, Turbeville 1	*	1107
White-Duncan et al, Pruett-Webb 2-B	30	698
Young County—		
W. F. Dolenger et al, Alexander 1	*	590
Perkins & Cullum, Lemmonds 9	10	740
W. M. Ramsier et al, Routon 1	*	750

*Failure. †Junked. ¶Million cu. ft. gas.

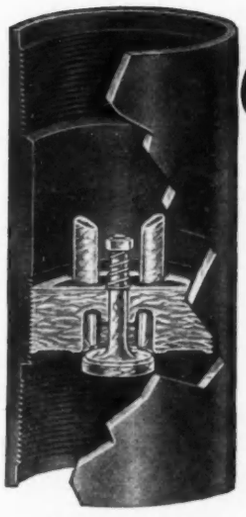
Crockett County Well Produces 500 Barrels

San Angelo, Texas. — The West Texas district contributed two completions, including a producer and a dry hole, during the past week.

Completions follow:

Company, Well and Location	Initial Production Bbls.	Depth
Crockett County—		
Continental Oil Co., J. S. Todd 1-B, Sec. 31	*	1516
Glasscock County—		
Llano Oil & Dev. Co., W. P. Edwards 1	500	2179

*Failure. †Junked. ¶Million cu. ft. gas.



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Three Counties Continue Lead in Texas Locations

Austin, Texas.—Gregg, Montgomery and Rusk Counties continue to lead Texas counties in the number of drilling permits issued for new wells, these three calling for 58 out of the total of 124 granted for the state.

Gregg County will start 21 new wells, according to the week's permits, Montgomery will start 19, and Rusk 18.

In Archer County, White & Duncan, Wichita Falls, were granted a permit to drill S. Webb 2-B (40-ac), 300 feet north of No. 1 in the I&GN Survey. Bridwell Oil Company, Wichita Falls, was granted permit to drill C. L. Abercrombie 2 (493-ac), 1780 feet from east and 300 feet from south line of Block 89, Club Ranch Survey. C. L. Abercrombie, Archer City, was granted a permit to drill Fee 1 (40-ac), 960 feet from north and 750 feet from east line of Block 154, Club Ranch Survey.

In Austin County, (amended location) Humble Oil & Refining Company, Houston, was granted a permit to drill A. Diemar 5 (226-ac), 1450 feet southeast of No. 3, Wm. Harvey Survey.

In Bastrop County, Humble Oil & Refining Company, Houston, was granted a permit to drill B. White 1 (227-ac), 1893 feet from north and 1090 feet from west line of C. S. Smith Survey.

In Baylor County, Consolidated Oil Company, Wichita Falls, was granted a permit to drill W. H. Portwood M1 (40-ac), 783 feet from north and east lines of 3138 TE&L Survey.

In Bexar County, D. C. Pegg, San Antonio, was granted a permit to drill E. Gembler 3 (100-ac), 200 feet from east and 630 feet from south line of Section 4, No. 51 Survey. C. W. Richards, San Antonio, was granted a permit to drill J. Halbardier 6 (32-ac) 150 feet from north and 465 feet from east line of No. 57 J. M. Perez Survey; and 3, 350 feet north of No. 1. F. H. Etheridge, San Antonio, was granted a permit to drill J. F. Bilhartz 1 (100-ac), 150 feet from north and east lines of Section 48, F. Rolen Survey.

In Brown County, S. C. Herring, Brownwood, was granted a permit to drill T. E. McDaniel 1 (160-ac), 500 feet from east and 700 feet from south line of Section 28, HT&B Survey. F. N. May Estate, Santa Anna, was granted a permit to drill J. C. Whidden 5 (124-ac), 1175 feet northeast of No. 1, No. 52 W. M. Irion Survey. W. D. Cunningham, Brownwood, was granted a permit to drill H. H. Henslee 1 (25-ac), 150 feet from west and 450 feet from south line of P. Curlong Survey.

In Callahan County, H. Wadsworth, Baird, was granted a permit to drill A. Hickman 1 (40-ac), 150 feet from south and 450 feet from east line of Section 31 D&D Asylum Survey. H. H. Adams, Fort Worth, was granted a permit to drill T. A. Irwin 1 (80-ac), 600 feet from south and east lines of Section 349, G. W. Denton Survey.

In Clay County, Saxet Oil Company, Petrolia, was granted a permit to drill T. C. Thornberry 1 (43-ac), 150 feet from south and east line of Block 5, Thornberry Survey.

Cook County, Luther Hedrick et al, Wichita Falls, was granted a permit to drill E. S. Ramsey 1 (41-ac), 385 feet from west and 1300 feet from south line of B. F. Curtis Survey.

In Duval County, Southwest Drilling Company, San Antonio, was granted a permit to drill R. Wendt 7 (160-ac), 330 feet from south and east line SW¼ SE¼ of Section 43. Magnolia Petroleum Company, Dallas, was granted a permit to drill C. W. Hahl A 5, 660 feet east of No. 4, Section 45, J. Poitevent Survey. Shasta Oil Company, Houston, was granted a permit to drill W. R. Peters 1B, (160-ac), 330 feet from north and 990 feet from west line of Section 176. Navarro Oil Company, Houston, was granted a permit to drill C. W. Hahl 2 (320-ac), 600 feet east of No. 1, Section 360, J. Poitevent Survey.

In Eastland County, T. P. Coal & Oil Company, Fort Worth, was granted a permit to drill Fee 12 (1116-ac), 1650 feet from east and 2130 feet from south line of C. L. Durocher Survey. Lowe & Delaney, De Leon, were granted a permit to drill H. W. Sublett 4 (40-ac), south central part of lease, Section 4, GC&SF Survey.

In Fort Bend County, Gulf Production Company, Houston, was granted a permit to drill M. Gubbels A 2 (54-ac), 503 feet from north and 433 feet from west line of Block 3, S. Kennedy Survey. Humble Oil & Refining Company, Houston, was granted a permit to drill Lockwood-Sharp B 14, (938-ac), 500 feet from east and 302 feet from south line of Jno. Rabb Survey.

In Fisher County, Southern Oil Corporation, Fort Worth, was granted a permit to drill A. E. Pardue 1, (40-ac), 990 feet from south and east lines of Section 202, Block 1, BBB&C Survey.

In Gregg County, Manson Oil Company, Chicasha, Oklahoma, was granted permits to drill Barrett 6 (100-ac), 330 feet from north and east lines of Witcher Survey; 7, 330 feet from north and west lines of survey. Roeser & Pendleton, Inc., Fort Worth, were granted permits to drill Satterwhite A 5 (69-ac), 1131 feet from east and 330 feet from south line of D. Sanchez Survey; 6, 795 feet west of No. 1. A. G. Wynne, Longview, was granted a permit to drill Odd Fellows 1 (1-ac), center of M. Van Winkle Survey. Walter Logan, Receiver, Fort Worth, was granted a permit to drill T. B. Harris 3 (31-ac), 330 feet west of center of east line of W. H. Castleberry Survey. Amerada Petroleum Corporation, Fort Worth, was granted a permit to drill L. R. Hearne 9 (107-ac), 550 feet southeast of No. 4, W. H. Castleberry Survey. Rhoads Drilling Company, Fort Worth, was granted permits for Tract 4, 22, 550 feet northeast of No. 5, Sabine River Survey; Tract 5, 20, 450 feet southeast of No. 7, Sabine River Survey; 23, 575 feet southwest of No. 10; 24, east offset to Sun No. 17; 25, 575 feet northwest of No. 5; 26, 625 feet southeast of No. 2; 29, 500 feet southwest of No. 17; 30, 540 feet southwest of No. 18. The Texas Company, Shreveport, Louisiana, was granted permits to drill M. T. Cole 12 (145-ac), 325 feet north of No. 11, E. L. Walker Survey; 13, 300 feet northeast of No. 5. Tide Water Oil Company, Kilgore, was granted permits to drill M. B. Hughey 17 (200-ac), 188 feet from north and 770 feet from west line of J. Hilliard Survey; 18, 78 feet from north and 1899 feet from west line of survey. Yount-Lee Oil Company, Beaumont, was granted permits to drill E. M. Whatley B 2 (39-ac), 415 feet from west and 330 feet from south line of Wm. Robinson Survey; F. K. Lathrop B 3 (63-ac), 330 feet from east and 1050 feet from north line of Wm. Robinson Survey.

In Harris County, Sun Oil Company, Beaumont, was granted a permit to drill R. E. Burt 68 (292-ac), 250 feet south of No. 66, R. Dunman Survey.

In Jack County, Brazos River Gas Company, Mineral Wells, was granted a permit to drill J. S. Rhodes 1 (244-ac), 350 feet from north and west lines of Wm. Orr Survey.

In Jefferson County, W. J. Parker, Beaumont, was granted a permit to drill V. T. Rorck 1 (433-ac), west central part of lease, A. Williams Survey.

In Montgomery County, Humble Oil & Refining Company, Houston, was granted permits to drill (amended location) W. R. Wiggins 1 (20-ac), 499 feet northeast of center of southwest line of T. M. Wiggins Survey; L. B. McComb 4 (150-ac), 873 feet from west and 1134 feet from south line of L. Smith Survey; 3, 1329 feet from east

and 466 feet from south line; South Texas Development B 6 (226-ac), 442 feet from west and 323 feet from south line of C. T. Darby Survey; 7, 296 feet from north and 443 feet from east line; M. A. Emory 4 (400-ac), 500 feet north of No. 2, No. 13 W. C. Ry. Survey; 5, 466 feet from north and 442 feet from west line. Alpha Petroleum Corporation, Houston, was granted a permit to drill P. G. Krohn A 5 (100-ac), 395 feet from north and 550 feet from east line of S. H. Bryan Survey. Skelly Oil Company, Houston, was granted a permit to drill South Texas Development 2 (32-ac), 466 feet from north and 378 feet from west line No. 5 T&NO Survey (amended). Sun Oil Company, Dallas, was granted permits to drill South Texas Development 1 (80-ac), 344 feet from west and 467 feet from south line of No. 5 T&NO Survey; 2, 933 feet north of No. 1. Alpha Petroleum Corporation, Houston, was granted a permit to drill Texas Osage 1 (180-ac), 466 feet from south and east lines of G. Harris Survey. Hamil & Smith, Houston, were granted a permit to drill South Texas Development 1 (5-ac), 379 feet from west and 143 feet from south line of Section 5, T&N O Survey. Tide Water Oil Company, Houston, was granted a permit to drill C. M. Dean 3 (274-ac), 1540 feet from north and 550 feet from west line of W. C. C. Lynch Survey. Republic Production Company, Houston, was granted a permit to drill B. D. Griffin 1 (135-ac), 466 feet from north and 183 feet from west line of W. Strickland Survey. Gulf Coast Drilling Company, Houston, was granted a permit to drill Keystone-Mills 2 (571-ac), 382 feet from north and 434 feet from west line of A. Steel Survey. L. L. Horne, Houston, was granted a permit to drill South Texas Development 1 (18-ac), 311 feet from north and 345 feet from west line of No. 5, T&NO Survey. Standard Oil Company of Kansas, Houston, was granted a permit to drill A. A. Madeley 1A (63-ac), 601 feet from north and 237 feet from west line of Ransom House Survey. Navarro Oil Company, Houston, was granted a permit to drill Brown-Shaffer 1 (50-ac), 396 feet from north and 466 feet from west line of E. P. Brown Survey. The Texas Company, Houston, was granted a permit to drill W. S. Rhodes 12 (300-ac), 932 feet northwest of No. 8, W. S. Rhodes Survey; 14, 932 feet north of No. 12; E. Moody 17 (473-ac), 820 feet northwest of No. 16, Ransom House Survey.

In McMullen County, Gant & Teas, San Antonio, were granted a permit to drill Hagist 1 (640-ac), 330 feet from north and west lines southwest quarter of Section 24, Block 5, H&TC Survey.

In Medina County, Pearson Oil Company, San Antonio, was granted a permit to drill Suburban Farms 14 (27-ac), 700 feet from north and 600 feet from west line, L 8A, Block 3, M. W. Hewitt Survey.

In Milam County, Ray Clark, Thorndale, was granted a permit to drill T. H. Graves 1 (93-ac), 450 feet from north and east lines of J. Hall Survey.

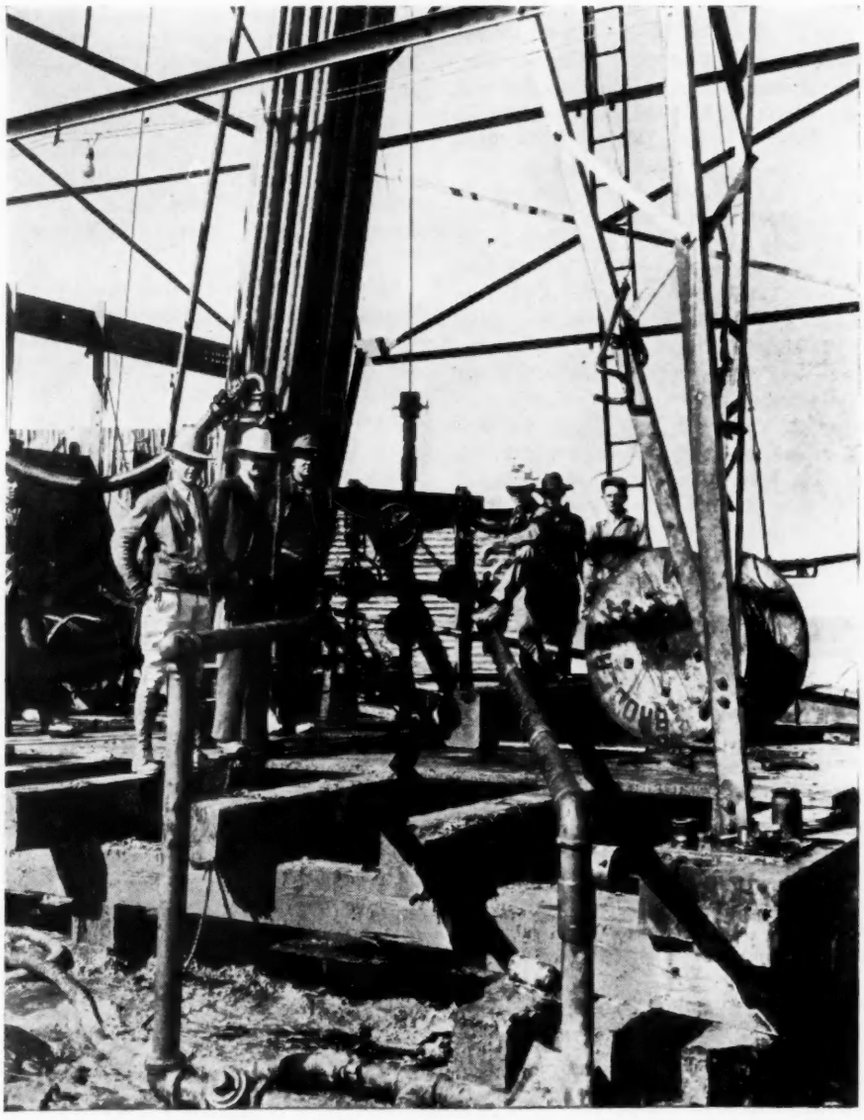
In McLennan County, Ohlfest, Burleson, Migel Company, Waco, was granted a permit to drill C. N. Cassin 1 (398-ac), 1875 feet from west and 417 feet from south line of J. Goss Survey.

In Montague County, Humble Oil & Refining Company, Houston, was granted a permit to drill L. L. Cobb 1 (42-ac), 330 feet from south and east lines of Jas. Ferguson Survey.

In Nueces County, Houston Oil Company, Houston, was granted a permit to drill E. McGregor 3 (135-ac), 458 feet northwest of No. 1, No. 311 Survey.

In Palo Pinto County, Clay and Lancaster, Inc., Merkel, were granted a permit to drill A. Ritchie 1 (160-ac), 450 feet from northwest and 200 feet from northeast line of S. P. Ry. Survey. W. K. Gordon, Fort Worth, was granted a permit to drill P. E. Askew 3 (204-ac), 950 feet from north and 400 feet from west line BCSL No. 3 Survey.

In Pecos County, J. R. Bennett, Fort Stockton, was granted a permit t o drill E. Powell 1 (160-ac), 330 feet from southwest and southeast line of Section 76, Block 10, H&GN Survey. A. & M. Petroleum Company, El Paso, was granted a permit to drill F. Bowers 3 (80-ac), 330 feet from south and east lines of Section 31, Block 16, University Lands Survey. Humble Oil & Refining Company, Houston, was granted a per-



John Deering's Warren 2, northwest flank of Hockley dome, Harris County, suggested commercial possibilities of oil production in an area which previous drilling had condemned. Its initial production was 500 barrels of 39.1 gravity oil, produced from sand at 2427 feet.

mit to drill White-Baker 1 (640-ac), 1320 feet from north and east lines of Section 44, Block Z, T. C. Ry. Survey.

In Rusk County, Leonard Petroleum Company, Washington, Penna., was granted permits to drill F. J. Cox 2 (20-ac), 330 feet from north and east lines of R. H. Penney Survey; E. B. Alford 2 (10-ac), 117 feet from north and 350 feet from east line of T. J. Moore Survey. W. L. Stearns, Dallas, was granted a permit to drill D. M. Bradford 1 (5-ac), 158 feet east of center of west line of J. Ximinez Survey. Kirby Petroleum Company, Houston, was granted a permit to drill J. Reddic 8 (80-ac), 330 feet from south and east lines of T. Grace Survey. Darby Petroleum Company, Tulsa, Oklahoma, was granted a permit to drill C. O. Christian 10 (117-ac), 700 feet north of No. 4, M. McCabe Survey; 8, 750 feet south of No. 6. W. B. Herring, Dallas, was granted permits to drill W. H. Frederick 1 (30-ac), 150 feet from north and west lines of Block 8, J. Ximinez Survey; 2, east offset to No. 1 Killum; 3, east offset to No. 1 Tex-Lloyd; 4, 175 feet from west and 150 feet from south line. Humble Oil & Refining Company, Houston, was granted permits to drill (amended location) J. D. Florey 5 (89-ac), 686 feet from north and 347 feet from west line of T. J. Martin Survey; C. Young 2 (33-ac), 717 feet from north and 347 feet from west line of T. J. Martin Survey; J. D. Florey B 1 (9½-ac), 294 feet from north and 430 feet from west line of T. J. Martin Survey; C. Young B 1 (7½-ac), 347 feet from east and 239 feet from south line of T. J. Martin Survey; J. W. Turner 18 (400-ac), 1088 feet from west and 210 feet from south line of J. M. Scott Survey. Gulf Production Company, Houston, was granted permits to drill (amended location) T. C. Reeves 5 (80-ac), 238 feet northwest of No. 6, G. F. Penn Survey; G. C. Turner 20 (312-ac), 217 feet from west and 330 feet from south line of F. Cordova Survey; J. W. Shaw 9 (89-ac), 217 feet from east and 330 feet from south line of F. Cordova Survey.

In Shackleford County, J. L. Hart et al, Albany, were granted permit to drill E. Schkade 2 (140-ac), 1700 feet from north and 1470 feet from east lines, 570 TE&L Survey. F. N. Palm, Albany, was granted a permit to drill V. Palm 2 (60-ac), 450 feet from west and 300 feet from south line of Section 67, LAL Survey. Roeser & Pendleton, Inc., Fort Worth, were granted permit to drill Morris-Buie A2 (560-ac), 440 feet north of No. 1, Section 201, E. T. Ry. Survey. J. L. Douglas, Moran, was granted a permit to drill A. Hickman 1 (40-ac), 150 feet west of center of east line of Section 70, LAL Survey. E. W. Sparr, Casper, Wyoming, was granted a permit to drill H. B. Haterus 1 (40-ac), 1120 feet from north and east lines of Section 163, BBB&C Survey. J. L. Hart, Albany, was granted a permit to drill G. W. Webb 1 (240-ac), 2000 feet from east and 1020 feet from south line of Section 586 TE&L Survey. Kittery Oil Company, Albany, was granted a permit to drill J. N. Cox 4 (110-ac), 1116 feet from west and 450 feet from south line W. S. Riddle Survey. C. W. Waddington, Fort Worth, was granted a permit to drill L. E. Pritchard 1 (40-ac), 450 feet from east and 150 feet from north line of Section 17, University Lands Survey.

In Smith County, Sun Oil Company, Dallas, was granted a permit to drill J. J. Denton A 5A (114-ac), 330 feet from south and west lines of J. Vargas Survey.

In Starr County, Holloway & Tilton, Rio Grande City, were granted a permit to drill Doyno 1 (28-ac), 150 feet from north and west lines of Porcion 75, Share 16.

In Tom Green County, Mintex Oil Company, San Angelo, was granted a permit to drill H. C. Campbell 1 (640-ac), 465 feet from south and 632 feet from west line of Section 180, S. P. Ry. Survey.

In Upshur County, Salome Cooper Drilling Company, Gladewater, was granted a permit to drill E. O'Byrne 7 (301-ac), 330 feet from west and 548 feet from south line of J. M. Pineda Survey.

In Ward County, Atlantic Oil Producing Company, Dallas, was granted a permit to drill W. D. Johnson 2 (320-ac), 990 feet from northwest and 2310 feet from northeast line of Section 9, Block 34, H&TC Survey. Bradford & Sims, Grandfalls, were granted a permit to drill A. Emory 1 (8-ac), 490 feet from north and 2310 feet from west line of Section 26, Block 5, H&TC Survey. A. Bradford, Grandfalls, was granted a permit to drill E. Beatty 1 (80-ac), 1650 feet from north and 330 feet from west line of Section 3, Block 34, H&TC Survey.

In Webb County, Earl Callaway, San Antonio, was granted a permit to drill A. E. Gates 1, 330 feet from north and east lines of NE¼ SW¼ of Section 14. S. R. & C. Oil Corporation, San Antonio, was granted a permit to drill Duval Ranch 1 (160-ac), 1343 feet from east and 150 feet from south line, No. 3, Block 11, ZCSL Survey. South Texas Oil Company, Laredo, was granted a permit to drill B. Rosenburg 11 (640-ac), 211 feet from east and 150 feet from south line of Block 16, No. 271 Survey. Magnolia Petroleum Company, Dallas, was granted a permit to drill J. M. Garcia 4, 300 feet east of No. 2, Section 1100.

In Wichita County, F. C. Baldwin et al, Wichita Falls, were granted a permit to drill J. W. Kennedy 35 (162-ac), 150 feet from east and 200 feet from south line of Block 6, GC&SF Survey.

In Young County, Jno. H. Kleiner et al, Cisco, were granted a permit to drill J. M. Kirkland 1 (20-ac), 150 feet from west and 435 feet from south line of 2249 TE&L Survey. Perkins & Cullum, Wichita Falls, were granted a permit to drill G. R. Lemmond 10 (110-ac), 3170 feet from north and 150 feet from east line of Section 1, BBB&C Survey.

In Zapata County, Dr. R. McCormick, Rio Grande, was granted a permit to drill Bustamente 1 (171-ac), 450 feet from east and 1911 feet from south line of No. 32 Comitas Survey.

McCollom Elected to Head San Antonio Geologists

San Antonio, Texas.—L. F. McCollum, chief geologist of the San Antonio division of Humble Oil & Refining Company, was elected president of the San Antonio section of the American Association of Petroleum Geologists at the annual meeting in San Antonio February 17 and 18.

Other new officers of the organization follow: Fred P. Shayes, geologist of the United Production Corporation with headquarters in Beeville, vice president; J. Y. Myers, Shell Petroleum Corporation, San Antonio, secretary-treasurer; Dilworth Hager, consulting geologist, San Antonio, director. Joe M. Dawson, division superintendent and geologist, Gulf Production Company, San Antonio, was elected district representative to the American Association of Petroleum Geologists.

Texas Legislature Hearing On Gasoline Tax Bill Set

Austin, Texas.—A hearing on the floor of the House on the Metcalfe bill to control gasoline "bootlegging," has been scheduled for Tuesday morning, February 28.

Metcalfe declares that this bill will result in bringing in some $3,000,000 annually to the state from gasoline which has been escaping taxation in the past.

New methods of collection and enforcement are included which are designed to make "bootlegging" more difficult than it has been in the past.

Refiners over the state are supporting the measure in the hope that it will subject all gasoline to taxation, rather than that of the larger refiners who cannot move their plants from time to time, and thus dodge the levy.

Six Locations Announced in South End of Laurel Field

San Antonio, Texas.—Six new locations have been announced in the southern portion of the Laurel field, Webb County, for immediate drilling. They will create as many offsets to be drilled if production is obtained.

Magnolia Petroleum Company led with three, two on NW NE Section 1100, being south and west offsets to Garcia Villareal 1. Garcia-Villareal 4 is in NW SW Section 1100, and is a due east offset to Parr's Gates 1, gasser, which extended the field southwest a few days ago.

Dyck Oil Company's new location is one location south of Garcia Villareal 1, NE NW Section 1100; O. W. Killam's Garcia-Villareal 2 is NWc SE NE Section 1100; South Texas Oil Company's M. Rosenberg 3, southeast corner Block 16, Section 271.

After getting the sand at 2194-2202 feet, L. M. Kaiser is attempting to complete Villareal 1, Section 1099, Block 2, which is a half-mile east of production. The well was drilled in and showed considerable sand. A liner is now being set.

H. T. Smith et al's Lloyd 1, Block 14, Section 23, is coring around 2300 feet, having apparently missed the Rosenberg sand. This well showed for a probable producer in the Mirando sand at 1795-1815 feet.

Stanolind Wants Chance in Nueces County Spacing Rule

Austin, Texas.—A petition has been filed with the Texas Railroad Commission by Stanolind Oil & Gas Company, requesting that a hearing be set to consider the revision of the spacing rules in the Nueces County gas field.

The present rule there permits drilling of wells 300 feet apart, and 150 feet from lease or division lines.

While the Stanolind Oil & Gas Company does not suggest any specific change in the ruling, it points out in the petition that its well is set back 660 feet from lease lines, and it is presumed that it will request an order requiring other operators to follow the same procedure.

A hearing date will be scheduled as quickly as the commission can obtain a complete list of the operators involved.

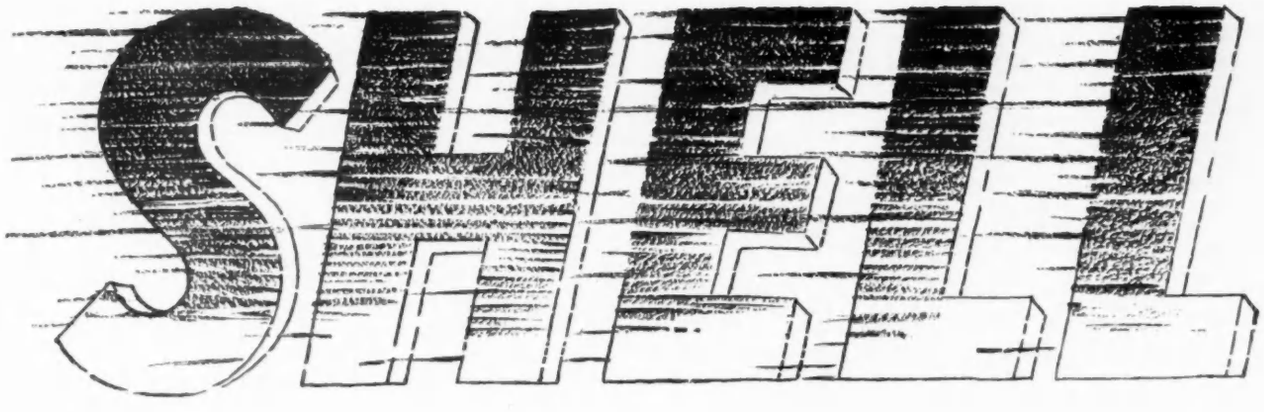
Saxet Northern Portion Getting Close Attention

San Antonio, Texas.—Two good producers in the extreme northern portion of the Saxet field, Nueces County, from the 4800-foot sand have attracted attention to that section of the field. Three more wells are near the sand and a third is in process of completion.

Houston Oil Company's McGregor 2, Section 311, is flowing 500 barrels from 4860-76 feet, and the company is building derrick for a third well. Oso Drilling Company's M. J. Roark 1, E. Villareal survey, deepened from 4867 feet to 4886 feet, is flowing 150 barrels.

Violet Oil Company's McGregor-Belk 2, Survey 311, is swabbing at 4871-74 feet, where it is showing for a producer. Benedum & Trees Oil Company's F. J. Smith 1, Shepherd Farm Lots, Block 35, is drilling at 4550 feet; Shasta Drilling Company's F. Quiros 1, Section 311, is down 4863 feet, coring for the sand; Texas Coast Oil Company's Clark Morgan, Section 405, is drilling at 4230 feet.

A number of new locations were made in the vicinity of the new producers during the week, and are underway.



Victoria County Area Has Production for Third Sand

San Antonio, Texas.—A new producing horizon, the third in the field, has been uncovered on Keeran ranch, Victoria County. Union Oil Company of Nevada's C. N. Keeran 2, M. de Leon survey, is a large gasser spraying a quantity of gasoline from 5493-5507 feet, with a pressure of 1900 pounds. Incidentally, the well is the third producer in the field, each producer being from a different sand.

This field was discovered January 31, 1932, by C. B. Bunte, Inc., Gulf Production Company and C. R. & M. Drilling Company with Keeran 1, M. de Leon grant. The well showed 50,000,000 cubic feet of gas, 2250 pounds pressure, and sprayed 30 barrels of gasoline a day from 5181-91 feet.

The second well drilled by the above operators was completed August 11, same year, from 5831-41 feet, showing 500 pounds pressure on tubing, 1000 pounds on casing through ¼-inch chokes. It showed an initial production of 500 barrels.

Several dry holes have been drilled in the vicinity. One other active operation is reported, that being Bunte-Gulf-CR&M's Keeran 3, which is down 6910 feet.

The new well is located about 1½ miles east and north of Bunte et al's Keeran 2, and places considerable territory in the play. This well was drilled to a total depth of 6609 feet, testing several sands on its way down. It then was plugged back to the upper sand and completed.

New Bastrop County Field Getting Away to Good Start

San Antonio, Texas.—An immediate development campaign is in prospect for the Hilbig Serpentine field, discovered in Bastrop County February 15 by Humble Oil & Refining Company. Two new locations are already active, a third definitely announced and several more to be announced within the next day or so by this company. Sun Oil Company and The Texas Company hold close in acreage and undoubtedly will enter the play within a short time.

Humble Oil & Refining Company's well showed an estimated open flow of around 2000 barrels, and tested 7½ barrels an hour through ⅛-inch choke, showing 350 pounds on the tubing and 500 pounds on the casing. It is Annie Hassler 1, Wolfenberger survey, in the southwestern portion of the county.

Two Duval County Tests Promise to Open New Fields

San Antonio, Texas.—Development of two more oil fields in Duval County seems apparent as the result of two wildcats, both of which promise production.

The most important is S. R. & C. Oil Company's Hagist 1 in the northern portion of the county and in the Government Wells trend. This well topped the sand approximately at 2110 feet and was preparing for a test late in the week. The cores are said to have shown sufficient saturation to indicate production. Location is 349 feet from the west line and 330 feet from the south line of Tract 5, Section 267, about 1500 feet northeast of Buchanan & Terrell's Hagist 1, same section, which on August 13, 1932, made a gasser in the same horizon.

Buchanan & Terrell's well cored a sand from 2110-22 feet, a shale stratum to 2134 feet, and another oil sand to 2144 feet, where it was completed for 6,000,000 cubic feet of gas, showing a slight bit of oil. It was then deepened several hundred feet and abandoned. Both wells are in what is classed as the Government Wells horizon, the prolific producing sand in the North, South and Original Government Wells field eight miles farther southwest.

Buchanan & Terrell well's action late last summer attracted attention to this portion of Duval County, and indicated the continuance of oil production from the Government Wells field in a northwesterly direction into McMullen County.

The other important well was Stanley Smith's Pena 1, Section 79, about seven or eight miles due east of North Government Wells, which was brought in as a gasser recently from 1915-32 feet, possibly in the Cole sand. It was put on separator February 16 and has been spraying about eight barrels of oil a day with a tendency to increase.

Stanley Smith is drilling Manuel Oliverez 1, Section 80, about 1500 feet southeast of the Pena 1, at 1640 feet and should throw an interesting light on the area within the next few days.

Saxet Gas-Oil Ratio Increased by Commission

Austin, Texas.—Operators in Saxet field were allowed to increase the gas-oil ratio of their wells to 3000 cubic feet per barrel by an order of the Texas Railroad Commission issued February 21, superseding an old order allowing only 2000 to one ratio.

Other provisions of the order call for installation of orifice meters on each well within 15 days, weekly filing of meter charts with the deputy oil and gas supervisor in the field, a report of the disposal of the gas produced, and the production of wells through tubing of 2½-inch or less diameter.

Nueces and Duval Counties Lead South Texas Activity

San Antonio, Texas.—Nueces and Duval Counties were the leaders in producers during the week. They follow:

Company, Well and Location	Initial Production Bbls.	Depth
Aransas County—		
F. E. Kistler, Trustee, McCampbell 1, Lot 1, Blk. 58...	*	5006
Atascosa County—		
Jacob, Buzzini & Pickett, W. J. Roundtree 1, Sec. 1....	*	1265
Duval County—		
Byrd Oil Corp., P. T. Wright 1-A, Sec. 101	65	2298
Mag. Pet. Co., J. V. Allen 5, Sec. 42	192	2287
Guadalupe County——		
John F. Camp, Sue Denman 3, Arrington Survey	*	3373
Jim Wells County—		
Humble Oil & Ref. Co., Fuhrman 1, P. Sacks sur.	*	5247
Nueces County—		
Houston Oil Co., E. McGregor 2, Sec. 311	500	4876
Oso Dr. Co., M. J. Roark 3, E. Villareal sur (DD)....	150	4886
Refugio County—		
E. M. Jones, J. Mitchell 4, Lease 55, Refugio sur.....	150	6416
Starr County—		
Sinclair et al, Kelsey Bass 2, Sec. 5, Sur. 75-6-7	*	889
Howard Staggs, Ida Davis 1, Tract 4, Porcion 81.....	*	1530
Witherspoon Oil Co., Doyno 1, Blk. 5, Tract 77-A, Por. 81	*	1486
Victoria County—		
Union Oil Co., C. N. Keeran 1, M. de Leon sur.....	¶30	5507
Webb County—		
Reward Oil Co., M. Rosenberg 2, Lot 15, Sec. 271.....	25	2203

*Failure. †Junked. ¶Million cu. ft. gas.

South Texas List Includes Tests Near Determination

San Antonio, Texas.—Several important wildcats in South Texas were nearing completion late last week.

Humble Oil & Refining Company has three locations in the new Hilbig district, Bastrop County. Beck 1, listed as derrick; Friske 1, location; Betty White 1, rigging up. Several more are to be announced shortly. Marts and Beavens' Roy Rivers 1, Sandifer survey, is drilling below 2000 feet.

Aztec Oil & Royalty Company has made a location in the Tuleta area, Bee County. B. Mauldin tested 31 joints of oil and 50 pounds pressure in 15 minutes in a sand from 3881-91 feet in Fee 2, Kerr survey. Tabor, O'Neill and Howeth's J. P. Harris 1, Block 13, Section 13, plugged to 4130 feet and perforated at 4110 feet, and is waiting on cement. The Texas Company's D. W. Cox 2, Section 2, has spudded.

C. J. Albertson is preparing to set casing in a gas sand at 506-8 feet in Mrs. C. Hoch 1, Jose Maria Baerera survey, Bexar County. William V. Ballard's San Antonio Land and Development Company 1-A, I. Perez survey, is showing gas at 1017 feet. E. R. Byrd is below 100 feet in W. H. Russell 1, Survey No. 6. Chiquita Oil Company is preparing to complete about 1465 feet in A. C. Hunter 4, Josephine Martinez survey. Eckert & Son are drilling A. Brehm 3, L. Boquar survey. F. H. Etheridge's Bilhartz 1, F. Rolen survey No. 48, is moving on. M. L. Howard is working with J. M. Watson 1, No. 16 B. Martinez survey, to complete at 2505 feet in the Edwards lime. Motes-Campbell Company are drilling below 535 fee in R. T. Pruitt 1, McCullough survey. D. C. Pegg et al's Walter Gembler 3, Survey 51, is spudded. Earl S. Post's Bilhartz 1 in the F. Rolen survey No. 48, is building derrick. Leonard Ray is down 300 feet in Tom Dillon 1, M. de Luna survey. C. W. Richards is drilling at 200 feet in J. Halbardier 6, J. M. Perez survey No. 4. Sun Rise Oil Company's R. J. Uechert 1, Jose M. Martinez survey has spudded.

Adams & Lyles' Roberts 1, John Neill survey, Caldwell County, is spudding. Louis Crouch's S. Nealson 1, John B. Gray 1, is down 1400 feet. E. L. Hope and Joe Cole's M. August 1, A. Floyd survey, is drilling at 500 feet. E. R. Thomas is testing the Edwards lime at 2306 feet in his O. S. Alexander 1, William Spillers survey.

In Duval County, Central Producers are preparing to complete Johnson-Tuck 1, Section 42, at 2300 feet. Commonwealth Oil & Gas Company are starting J. Benavides 1, Subdivision 1 of the Carpenter Subdivision of the El Mesquite Grant. Hester Brothers have built derrick for Fee 1, Section 47. Humble Oil & Refining Company's P. White 11, Section 249, is rigging. Magnolia Petroleum Company has skidded to J. V. Allen 6, Section 42, and is drilling on Duval County Ranch 1, Section 209; B. White 4, Section 44, is starting; S. R. C. Oil Company is coring for the sand at 2140 feet in Hagist 1, Survey 267. Wilkins Seacord's Lundell 2, Section 48, is a location. Shasta Highland Oil Company's W. R. Peters 1-B, Section 176, set surface casing. Stanley Smith is drilling at 1640 feet in Manuel Oliverez 1, Section 80. W. B. Stewart has spudded Duval Ranch 1, Section 362, and is drilling Duval Ranch 2, same section at 1300 feet. The

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Texas Company's M. B. Johnson 7, Section 42, is starting, as is the company's D. J. Freer 5 and 6 in Section 45.

James E. Greenlee is drilling Burns 1 at a shallow depth. It is in Section 123, Frio County.

W. A. Scrutchin's S. J. Lowman 1, Section 1, Block 1, S. Barnes survey, Guadalupe County, is below 500 feet.

Carl & Johnston's W. M. Doughty 1, Section 9, San Salvadore survey, in Hidalgo County, is spudding.

Magnolia Petroleum Company's A. A. Seeligson 2, Jim Wells County, is preparing to spud. It is in No. 218 V. Canales survey.

W. R. Campbell's Gilbert 1, C. Martinez survey, Karnes County, is drilling below 1186 feet.

In Live Oak County, Humble Oil & Refining Company's A. West 1, T. Hammond survey, is drilling at 1640 feet. Live Oak Petroleum Company's Jim Harper 2, Section 40, is drilling at 965 feet.

Gant & Tea's Hagist Ranch 1, Section 24, McMullen County, is down 560 feet. Greenwood & Calvert's Z. A. Booth 1, Section 21, John Garner survey, is drilling at 500 feet. Jaqua & Crow's Hagist 1, Section 467, R. W. Mills survey, is drilling below 1500 feet. Homer T. Lamb's J. T. Brown 1, M. Hely survey, is drilling at 1275 feet. Lefevre & Spice have spudded Jacob 1, Section 53, and are drilling at 275 feet. Charles B. Loftin et al's Brown 1, Duncan survey No. 54, is drilling at 920 feet. C. C. Shumway's Shiner 1, Block 45, is down 1250 feet. S. R. C. Oil Company's La Chusa 1, Section 47, is drilling around 400 feet. Tarver & Nance's J. Dickinson 2, Section 45, is still waiting on cement at 620 feet.

Benedum & Trees Oil Company's F. J. Smith 1, Block 35, Nueces County, is drilling at 4370 feet. John F. Camp is rigging King 1, Section 29. Gibson Oil Company's Ran Morgan 2 is a location. Gulf Port Oil Company has located Humphrey 3, Section 406; set surface casing on R. Morgan 1, Section 403. Houston Oil Company's McGregor 3 is preparing to move on. Shasta Oil Company's Quiros 1, Section 311, is drilling at 4710 feet, and Quiros 2 is a location. Texas Coast Oil Company's Clark-Morgan 1, Section 405, is drilling hard sand at 4230 feet. Violet Oil Company's McGregor Belk 2, Section 311, is washing down at 4874 feet to complete, and McGregor Belk 3, is a location.

Gulf Production Company is near 7000 feet in O'Conner 2, CEPI&M survey, Refugio County. Humble Oil & Refining Company's O'Conner 3, F. Rios survey, is drilling at 6340 feet. George E. Smith has built derrick for J. W. O'Brien 1, Winfield survey.

Saxet Oil Company is drilling at 5010 feet in F. S. Rachal 19, J. N. Seguin survey, San Patricio County. George W. Scruggs is drilling N. Collins 1, McGloin survey at 1112 feet.

B. & B. Oil Company had hard luck in its Starr County wildcat. It is sidetracking bit and drill stem at 1300 feet, the total depth being 4520 feet. It is Kelsey Bass 1, Porcion 87, Bryan & Tharp's A. Guerra 1, Block 6, San Jose Survey, is drilling at 1160 feet. E. R. Cooper's J. M. Martinez 1, Section 135, is drilling at 1085 feet. Floyd-Doyno-Toland's Seabury et al 1, Share 5, Porcion 75, is drilling at 445 feet. Goodwin & Yantis' M. J. Walker 1, Section 767, is drilling below 800 feet. Great Plains Oil Company has shut down Sanches 1, Section 344, at 2265 feet for water, and has shut down Sanches 2, same section at 570 feet for casing. Hooke & Weaver's Kelsey Bass 14, Section 6, lost a slip at 660 feet and moved over a few feet for Kelsey Bass 14-a. Jeffries Lambert Drilling Company's Starr County Cattle Company 1, Block 34, Porcion 89, is coring a sand at 2165 feet, showing oil and gas. Dr. R. M. McCormick's I. G. Garcia 1, Block 11-B, Porcion 71-72, is drilling at 330 feet. Moore & Jenkin's Seabury et al 1, Share 5, Porcion 75, is drilling at 175 feet; R. E. Margo 1 is a location. E. R. Stickney's H. Gonzales 1, Section 339, is changing to heavy rig.

In Victoria County, Gulf Production Company et al's Keeran 3, M. de Leon survey, is drilling at 6910 feet. Quintana Petroleum Company's S. W. McCormick 1, Section A314, is drilling by heaving shale at 5200 feet. Stoneleigh Oil & Gas Company's E. B. Terrell 1, R. Manchola survey No. 2, is laying water line. The Texas Company is drilling A. M. McFadden 6, Gray survey, at 2500 feet. Union Oil Company is completing C. N. Keeran 2, M. de Leon survey, at 5493-7 feet.

Earl Calloway is moving in on Lonnie Evans 1, Section 14, Webb County. Dyck Oil Company's Garcia-Villareal 3, Section 1100, is a derrick, and L. M. Kaiser's Villareal 1, Section 1099, is preparing to test at 2194-2202 feet after setting casing. P. L. Meaders' A. E. Gates 1, Section 14, is a location. Magnolia Petroleum Company's Garcia Villareal 2, is a derrick and Nos. 3 and 4 are locations. All are in Section 1100. S. R. & C. Oil Company is moving in on Duval Ranch 1, League 3, South Texas Oil Company's Laurel 11, Block 16, Section 271. H. T. Smith et al's Lloyd 1, Section 23, Block 2, is coring at 2200 feet.

Sexton Petroleum Company's Gutierrez 1, Block 4, F. Flores survey, Wilson County, is spudding.

San Antonio, Texas.—John F. Camp finally abandoned Sue Denman 3, William Arrington Survey, southern end of Darst Creek field, Guadalupe County. The well cut the fault and went into the Edwards at 2971 feet, which showed dry to near the total depth of 3573 feet, where it was finished. The well at this depth tested three tribbles of sulphur water in 20 minutes. This well was drilled to about 1000 feet above the regular producing level of the field.

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TULSA, OKLAHOMA

30,000 Barrels Flush Oil From Conroe Next Week

Houston.—While Conroe field recorded only 13 completions with an aggregate initial production of 23,829 barrels during the week, this temporary lull in activity will be more than offset by completions during the coming week.

Friday afternoon there were 20 wells in the field standing cemented on the 5100-foot producing horizon waiting for completion, so that an addition of around 30,000 barrels flush production from the field for the week ending March 4 appears a conservative estimate.

The outstanding development in the Conroe field area was abandonment during the week of Strake Petroleum Corporation of Delaware's Mrs. Elizabeth Moody 1. This well, attempting an extension of 11,500 feet southwest of production, was abandoned in shale at 5519 feet. It is located 1400 feet from the south line and 467 feet from the east line of a 726-acre tract in the C. B. Stewart Survey.

George W. Strake (personal), Keystone Mills 1, completed last week as a 3000-foot westerly extension to the field, turned out to be an unsatisfactory producer and will be plugged back to 5103 feet and recompleted.

M. J. Munn's South Texas Development Company 1, located 9000 feet east of production and in the Clark Beach Survey, showed 15 fourbles of mud and no oil when given a drill stem test at 4890-5140 feet. It is shut down at 5202 feet, waiting for drill pipe to go deeper.

Late completions of the week not shown in the completions table included: Humble Oil & Refining Company's Cartwright C-4, 2448 barrels through half-inch choke, depth 5150 feet; Humble's H. N. Moore 16, 2544 barrels through half-inch choke, depth 5139 feet; South Gulf Oil Company's E. M. Raugh 1, 216 barrels through an eighth-inch choke, and Standard Oil Company of Kansas' Smith & Ratliffe 2, 360 barrels through eighth-inch choke, depth 5123 feet.

Temporary Slackening in Gulf Coast Completions

Houston.—Flush oil added in Texas Gulf Coast during the week totaled less than any week's contribution since early in January, only 24,936 barrels being recorded. Of this amount, 18,261 barrels was from early completions of the week in Conroe and 5160 barrels from four wells at Rabb Ridge.

Three completions in the following tabulation are significant in that they probably will lead to additional drilling not announced as part of projected campaigns prior to the wells' being put on production. John Deering's strike on old Hockley dome, for instance, will lead to new field work. Strake's extension of Conroe field will have a similar effect, as will completion of Gulf Production Company's Hamerstream 1, a 2200-foot north extension of Rabb Ridge.

A glance at the status of drilling wells in Texas Gulf Coast counties and fields indicates the coming week will contribute more flush oil than the current week did, but possibly not as much as the 40,212-barrel figure recorded during the week previous.

Tabulation of the week's completions follows:

Company, Well and Location	Initial Production Bbls.	Depth
Conroe Field—		
Gulf Coast Drilling & Production Co., Keystone Mills 5	2380	5104
Harrison & Abercrombie, Arthur Wiggins 1	2064	5103
Humble Oil & Ref. Co., Emory 2	2496	5151
Maurice Hirsch B-1	2448	5145
L. B. Rooker 1	1968	5147
South Texas Dev. Co. B-5	2928	5140
G. W. Strake (Personal), Keystone Mills 1	1723	5121
The Texas Company, Elizabeth Moody 7	1006	5117
W. S. Rhodes 10	1248	5138
Hardin County—		
Joe E. Proctor et al, J. R. Bevil 1, Wm. Young Sur..	*	2685
Hockley Dome—		
John Deering, Warren 2...	500	2427
Markham Field—		
Hamill et al, Myers 3	480	3395
Montgomery County—		
R. L. Sprinkle, Rohlfs 1, SWc H. Prosens Survey..	*	5106
Moss Bluff—		
Texas Gulf Sulphur Co., Harrison 10	*	1065
Pierce Junction—		
Gulf Production Co., Taylor 36	68	4485
Moody Petroleum Corp., Whitehead 4-B	467	4619
Rabb Ridge—		
Gulf Production Co., Hammerstream 1	1320	5398
Gulf Production Co. & Humble O. & R. Co., Myers 6	1200	5300
Lockwood 7	1608	5300
Humble Oil & Ref., Mary Gubbels 4	1032	5310
Trinity County—		
C. M. Beckner, J. B. Gibson 1, Wm. Beasley Sur.	*	1192
Wharton County—		
Heep Oil Corp., Dayvault 1, Kincheloe Sur.	*	5200

*Failure. †Junked. ‡Million cu. ft. gas.

Harris County Wildcats Hold Gulf Coast Limelight

Houston.—In northern Harris County, near the Montgomery County line and along what is referred to as the Conroe trend, leasing and royalty trading has been going on at a rapid pace, later activity being more pronouncedly trading of royalty interests. Tomball and Hufsmith districts are involved in the plays.

One well drilling east of Hufsmith, Mills Bennett's Kleppel 1, located in the W. H. March Survey, and about three miles southwest of Indian Hill Oil Company's Schweinle 1, abandoned at 6143 feet, is reported to be running a little higher than the dry hole. Friday the well had passed 5700 feet, where cuttings were comprised of a brown, brittle shale. On an elevation of 180 feet, estimates of the top of the Hockleyensis in Bennett's well vary from plus 4620 feet to plus 4669 feet.

East of Mills Bennett's Kleppel 1 about 15,000 feet, Weatherall Oil Company is moving in derrick materials for Cora V. Peden 1, located in the northwest corner of the John Brock Survey and in the center of a 160-acre tract.

The area around Hockley dome, northwest corner of Harris County, also is being subjected to rather intense excitement, though the nature of properties leased there already will not be conducive participation of very many traders in any leasing activity that might develop. The area will hold interest for several weeks, however, due to John Deering's recent discovery of 39.1 gravity oil on the northwest flank of Hockley dome. He has announced location for a second test to be drilled a mile and a quarter northwest of Warren 2, the recent completion which was produced from 2427 feet.

In Austin County, Cranfill-Reynolds' Lewis Estate 1, James Cummings Hacienda, proceeded below 1631 feet after drilling through 12½-inch casing plug at 130 feet.

Brazoria County

Brazoria County, which has been rather quiet since Cedar Break was ushered in late in 1932 by Danciger Oil Refining Company, soon will be among the most interesting coastal counties again as this operator is preparing to start the second test there soon. It will be drilled about a quarter of a mile south by west from Hunt 1, discovery well which produced seven million cubic feet of gas and 28 barrels of distillate from 6782 feet. Among the other Brazoria County wildcats, Rycade Oil Corporation and Amerada Petroleum Corporation's Seaburn 3, attempting a mile and a half extension of Stratton Ridge to the east, is drilling below 2341 feet. Tri-Fin Oil Company's Moers 1, six miles southwest of Alvin and

in the F. Moore Survey, was in gumbo and lime at 3400 feet.

In the Manvel district of Brazoria County, two wells are drilling and one was completed during the week. Alpha Petroleum Corporation's Nichols 1-A, Lot 2, H. N. Little Survey, plugged back to 4040 feet after testing dry at 5645-60 feet. Burton Drilling Company's Sherwood 1, Lot 15 of the same survey, was temporarily standing at 4130 feet.

The Texas Company's Belcher 4 at Manvel, recently completed at 3890 feet to flow 246 barrels before going dead, was plugged back to 3879 feet and recompleted for 750 barrels of pipe line oil. Davis 1 and Natali 1 are new locations of The Texas Company at Manvel.

Brazos County, which has not been subjected to much wildcat drilling during the past 12 months, has one new location: C. W. Atkins and J. O'Neil's Clay 1, to be drilled in the Walter Sutherland Survey.

Colorado and Fort Bend

Although Colorado County has not shared appreciably production honors with other coastal counties, it promises to develop some interesting geological information during 1933. Fabriguze and Pool are rigging up on a test on the edge of Eagle Lake in the Patrick Reel Survey. Humble Oil & Refining Company, drilling John R. McLane 1 on a location about 10,500 feet north by east of Coyle-Concord Oil Company's discovery gas well of the Garwood region, has passed 3650 feet without reporting any significant showings. This test is in Section 42 of the I&GN RR Survey. Another test scheduled to get started soon in the Garwood area is Plymouth Oil Company's F. L. Ream 1, Section 47, I&GN RR Survey, reported moving in a rig. Pilot Oil Company's Tait 1, Cook & Dewees Survey, 1½ miles north of Altair, is standing at about 1600 feet.

The Fresno district of Fort Bend County is undergoing a temporary lull due to the fact that John Deering and Benedum and Trees Oil Company's Westenfield 1 has shut down at 6230 feet in shale. This wildcat, testing a 6000-acre block, is supposed to have had the Heterostegina at about 5500 feet. Lowrie and Young, prospecting in the Pilant Lake region, were drilling below 5780 feet in shale on Jackson Brown Estate 1.

Galveston and Grimes County wildcats did not change during the week from what was reported of them last week.

Ariola and Matagorda County

Houston Oil Company and Republic Production Company's Ariola Fee Y-1, previously reported temporarily abandoned at 5948 feet, has resumed drilling on Ariola prospect, Hardin County, and was in shale below 6190 feet at last report. Their Ariola Fee Z-1 is shut down for orders at 6400 feet.

In the semi-wildcat district of Mykawa, Crown Central Oil Company and Framar's Minnetex 4 is fishing for the testing tool after a drill stem test at 4830-65 feet showed mud and gas. Other Harris and Jasper County wildcats were reported shut down during the week.

In Jefferson County, Carroll and Miller's Mashman 1, W. B. Dyches Survey, was shut down at 200 feet, and Coast Oil & Gas Company's J. O. B. Young 1, Joseph Grigsby Survey, was drilling sand and shale at 3954 feet.

Hawkins 5, wildcat test well on Sheppards Mott being drilled by Cockburn Oil Corporation, is drilling the plug at 2150 feet after being forced to plug back from 5320 feet. Across the lease line from the Hawkins test, Coombs' Wadsworth Ranch 1 drilled to 1100 feet, but is waiting the outcome of Cockburn's test before resuming. It is understood the Wadsworth ranch test is prepared to go to 7500 feet for production if necessary.

In the Van Vleck region of Matagorda County, R. L. Sprinkle's Turner 1, M. Cummings Survey, has been reported as engaged in rigging up for several weeks, notwithstanding rumors to the effect that Sinclair Oil & Gas Company is interested in this test to the extent of contributing $15,000.

Buckeye townsite is one part of Matagorda County which will play a prominent part in the Gulf Coast wildcat news in a few days. United North & South Development Company's St.L.B.&M. RR No. 1, located 1000 feet northeast of the 7926-foot discovery well of the area, is drilling below 7830 feet, having been in broken formation showing oil since 7755 feet. East of the discovery well, the United is drilling below 1511 feet on Stoddard 2. Stoddard 1, the discovery well is being reconditioned in an effort to produce it from some of the upper horizons which showed oil.

Montgomery County

Montgomery County wildcats, as well as those in the northern part of Harris County, are being watched closely for revelation of information on the Conroe trend. C. J. Daniel and Hoppess' Flowers 1, W. Barker Survey, is reported coring below 1625 feet, at which depth the wildcat was in shale. A. H. Parsons' Drought 2, J. Kronkite Survey, is shut down at 3908 feet. West of Conroe field and in the John Sealey Survey, Mound Creek Oil Company's Sealey 1 is drilling near 5000 feet. In the F. Rogers Survey, C. C. Steinberger, Conroe operator, has spudded F. B. Smith 1. In the northern half of the county, Sutton and Hawkins' T. S. Foster 1 is shut down at 4287 feet. This test is on a 2079-acre tract in the Jose Maria de la Garza Survey.

In Newton County, L. A. James' Price & Bevil 1, N. B. Lewis Survey, four miles northeast of Bleakwood, was reported drilling below 2532 feet.

Polk County wildcat operations were featured during the week by abandonment of Abercrombie and Harrison's Carter Lumber Company 1 at about 5500 feet. This test, located in the Augustine Viesca Survey and about eight miles south of Livingston, was expected to shed light upon possible trend of production from the 1932 discovery of Dick Schwab on the Davis-Holmes property 10 miles south of Livingston.

Among the other Polk County wildcats, Joseph L. Anderson et al's Duke 1, Ace dome prospect, was drilling in shale at 4412 feet. Ace Oil Company's Martha E. Roberts 1, Joaquin F. de Rumayor Survey, was in shale at 5110 feet. Roxie Oil Company continued rigging up on Reid 1, located a mile north of Schwab's Carlton-Davis 1 and in the Augustine Viesca Survey. This test is slated to go to 4500 feet. Announcement of another test in the area of Schwab's wells will be made soon by Shell Petroleum Corporation who participated in development by Schwab.

In Tyler County, Spurger area, Republic Production Company and Houston Oil Company continue drilling on two tests. Kirby Lumber Company 1 E-1016, E. Thompson Survey, is drilling below 1000 feet. Kirby Lumber Company 1 E-1017 approximately 1000 varas northeast of the discovery well, Sterne 1, is drilling in sandy shale below 4566 feet.

Although tentative plans for two more tests have been rumored in Wharton County, active tests in that county are restricted to two following announcement this week that Steed Production Company's Lurker 1, Leech prospect, was temporarily abandoned in dark shale at 5020 feet. This wildcat is in Section 58, E.T. RR Survey.

Pure Oil Company's Stewart 1, Section 25, Morris Cummings Survey, was reaming brittle shale at 4339 feet. This wildcat has had tough digging most of the way, and while no significant shows have been encountered thus far, it is said to be "looking good." Smith, McDannald and Shell's Mitchell 1, three miles north of El Campo and in Abstract 661 of H&TC RR Survey No. 8, was coring sandy shale and streaks of sand at 6663 feet. Thus far it has made seven drill stem tests, all of which indicated some kick, but none of which showed any oil in commercial quantities. Revelations from the well have been such, however, as to assure another test for holdings of these operators even if Mitchell 1 is abandoned as a failure.

Houston.—Industrial plants in and around Houston will be served by a natural gas line, 10-inch trunk, to be built from Conroe field to a point near Sinclair Refining Company's plant on the Houston Ship Channel, according to an announcement by Moran Corporation of Texas, which proposes to build the line, starting construction at an early date.

After completion of the 35 miles from Conroe, Houston will have three line sources of supply, the others being property of United Gas Public Service Corporation and Houston Pipe Line Company, subsidiary of Houston Oil Company.

One Producer from Three South Louisiana Attempts

Houston.—While only one of the three Louisiana Gulf Coast completions of the week was a commercial success, there are a number of wells in fields and wildcat areas due for early completion.

The week's producer was Magnolia Petroleum Company's Bordages 10, located on the west side of Lockport field, which gauged 800 barrels initially from 6478 feet.

A list of the week's completions follow:

Company, Well and Location	Initial Production Bbls.	Depth
Dog Lake—		
The Texas Company's State Dog Lake 7, Sec. 31-21s-16e	*	2055
Jennings Field—		
Yount Lee Oil Co., Houssiere Latrielle 11	*	8550
Lockport Field—		
Magnolia Petroleum Co., Bordages 10	800	6478

*Failure. †Junked. ¶Million cu. ft. gas.

Important Wildcats at Gueydan and Darrow

Houston.—Darrow and Gueydan, in Ascension and Vermilion Parishes, respectively, continue to offer the most interesting developments in Coastal Louisiana wildcat activities, due primarily to the fact that their magnitude as crude reserves remains undetermined.

At Darrow, where Rio Bravo Oil Company has been doing all exploration work, Community 1, discovery well which was completed at 4035 feet last year for an initial production of 2400 barrels per day, is shut in with 125 pounds pressure. Six hundred feet west of this well, Gumble Lumber Company 1 is temporarily shut down at 4996 feet to repair a damaged derrick. O'Niel 2, located 1600 feet east of Community 1, is drilling at 4448 feet in sand and shale.

Pure Oil Company's Mulvey Irrigation Company 2, Gueydan, last was reported in sand showing oil at 4574 feet. Mulvey Irrigation Company 3 was a derrick, Section 34-11s-1w. Shell Petroleum Corporation's B. C. Hebert 1, SEc Section 10-15s-1e, was drilling sand and shale at 4341 feet.

Dr. T. W. Irvine's Mimms 1, Section 20-9s-7w, Calcasieu Parish, was reported shut down in hard lime at 2175 feet.

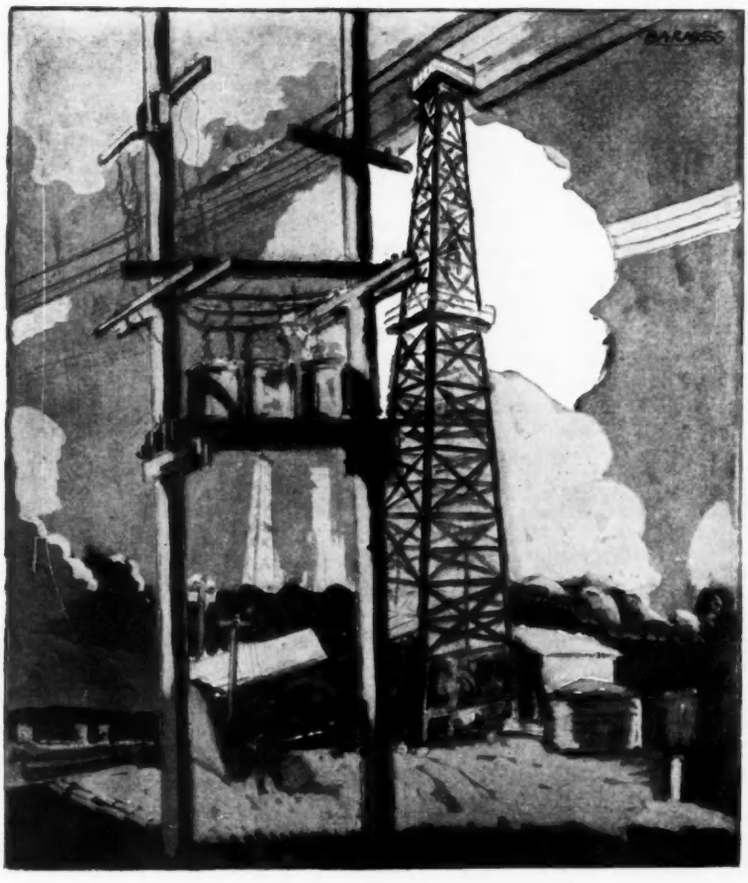
In Concordia Parish, M. M. Stokes et al's Pan American Life Insurance Company 1, Section 18-9n-10e, was reported drilling below 1580 feet in shale.

Petroleum Industries' Lee Lumber Company 1, SEc NW SE Section 13-5n-2e, Rapides Parish, was a new location.

In the semi-wildcat region of White Castle, Iberville Parish, Shell Petroleum Corporation's Wilbert 6 was in salt at 6165 feet after having topped this formation at 5498 feet. Another Iberville Parish test, Standard Oil Company of Louisiana's Gay 3, Choctaw dome, was nearing 4400 feet in shale.

Humble Oil & Refining Company's Devilbiss 1, Roanoke district of Jefferson Parish, is nearing 4500 feet.

Cook Drilling Company's Deliecroix Farms 1, Olevier prospect, in Section 127-14s-14e, was drilling a plug at 5040 feet.



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Sub-Surface Differential Regulators Control Pressure

Shreveport, Louisiana.—Use of differential regulators operating at 5400 feet below the surface in high pressure gas wells is a recent innovation in the Rodessa gas field of Caddo Parish, Northwest Louisiana, where deepest pay in North Louisiana is obtained.

These regulators, installed at a depth at which freezing cannot take place because of the high sub-surface temperature, are adjusted to so decrease the delivery pressure of the gas that freezing cannot take place at the surface controls when this delivery pressure is further reduced to line pressure.

One of the differential regulators has been in operation for about two months, the other for about one week. Both are functioning perfectly according to engineers.

The equipment consists of a spring-operated differential valve which is coupled to the lower end of an Otis removable bottom hole choke, and is run and pulled on a Halliburton measuring device in the same manner as the choke is ordinarily run and pulled.

The tension on the spring, which tends to keep the valve closed against well pressure, is simply and easily adjusted before running, so as to always maintain a constant differential across the valve.

In the two installations in the Rodessa field it was found that the highest tubing head working pressure at which it could be definitely assured that freezing would not take place is approximately 1300 pounds. The closed pressure of the wells is 2200 pounds, or 900 pounds above the safe delivery pressure. The springs on the valves were so adjusted that the pressure on top of the valve, set at 5400 feet, will be 900 pounds less than beneath it, or so that the closed surface pressure of the tubing can rise only to 1300 pounds instead of 2200 pounds. The possible delivery range through the tubing is from zero up to that quantity which the selected pressure above the valve will deliver against line pressure.

In tests conducted February 20 on United Gas Public Service Company's H. J. Bussa 1, Section 33-23-16, this production range under their conditions, was found to be from zero up to 7400 thousand cubic feet daily. Tests on other wells in the Rodessa field indicate that this production range can be increased on up to full well capacity by the additional use of a mixing valve which draws its supply of gas from the casing head connection, but utilizes the hot gas from the tubing to warm this casing head gas and to prevent freezing at the point of expansion.

Engineers declare that this use of a sub-surface differential regulator to bring about the delivery of a wide range of warm or hot gas from the tubing, together with the use of a valve which draws additional gas when needed from the casing head, is a new and constructive step in the safe operation of extremely high pressure gas wells.

Six Permits to Drill Issued in Louisiana

Shreveport, Louisiana.—Six parishes in Louisiana each announced one new operation during the week, three in North Louisiana and three in the Louisiana Gulf Coast region.

In Caddo Parish, The Texas Company, Shreveport, was granted permit to drill D. H. Rains 20, 1170 feet east and 150 feet north of the SWc SE Section 15-21n-15e.

In Cameron Parish, Southern Carbon Corporation, Houston, Texas, was granted a permit to drill Gulf of Mexico 1, 333 feet south and 338 feet east of SWc of Section 29-15s-10w.

In De Soto Parish, Jerry Ryan et al, Mansfield, were granted a permit to drill Sample 1, 330 feet north and 330 feet west of SEc SW NW Section 23-13n-12w.

In Iberia Parish, Jefferson Lake Oil Company, Iberia, was granted permit to drill Lake Peigneur 48, 55 feet east of well No. 3 and 148 feet south of well No. 40.

In Rapides Parish, T. J. Arldor, Alexandria, was granted permit to drill R. G. Baum 1, 600 feet north and 600 feet east of SWc NE SW of Section 27-6n-2e.

In Red River Parish, Howard W. Jones, Shreveport, was granted permit to drill A. N. Sample 1, 330 feet south and 330 feet east of NWc of Section 10-14n-11w.

Three Producers from Six North Louisiana Attempts

Shreveport, La. — Three oil wells, one gasser and two dry holes comprised the list of completions in North Louisiana last week. The three oil wells and one of the dry holes were in the chalk rock field at Zwolle, Sabine Parish.

An attempt to pick up the Cartersville pay horizon around 3000 feet that has shown oil in three recent tests in the Miller's Bluff area of Bossier Parish in a test one mile to the west in Caddo Parish, ended in failure when Bolinger & Walker abandoned Thompson 1, NW NW SW Section 16-22-14, as a dry hole at total depth of 3107 feet.

After shooting formation, Louanna Oil & Gas Company, Incorporated, completed Currie et al 1, NE SE Section 32-19-16, in the Blanchard gas field in Caddo Parish where gas is found in the Tokio, as a 10 million foot gasser at total depth of 2771 feet.

There were three new locations made during the last week. The Texas Company probably will try for chalk rock production in the old Caddo field of Caddo Parish in D. H. Raines 1, located 1170 feet east and 150 feet north SWc SE Section 15-21-15. The Texas Company has been treating some old chalk rock wells in this area with acid, and while no official results have been made public, it is reported they are satisfactory.

In the Naborton field of DeSoto Parish where there is also a shallow chalk overlying the Nacatosh, and which has shown oil, Jerry Ryan et al made location for Sample 1, SE SW NW Section 23-13-12. A new location was also made for the Converse field, Frost Lumber Company 1, NE NE Section 20-10-13, Sabine Parish.

Completions for the last week in North Louisiana follow:

Company, Well and Location	Initial Production Bbls.	Depth
Caddo Parish—		
Bolinger & Walker, Thompson 1, 16-22-14	*	3107
Louanna O&G Co., Inc., Currie et al 1, 32-19-16.....	¶10	2771
Sabine Parish (Zwolle)—		
Magnolia Pet. Co., Ruth Gindratt 1, 30-8-11	540	2240
E. L. Hunt, Livington 1, 9-7-11	40	2396
C. D. Neff, Trustee, Snell 1, 9-7-11	5	2650
E. M. Thomasson et al, Andries 1, 22-7-11	*	2825

*Failure. †Junked. ¶Million cu. ft. gas.

Wherritt No Longer With Proration Suit Defendant

Fort Worth, Texas.—The retirement of A. R. Wherritt of Shreveport, Louisiana, as an officer and stock holder of Central Oil Corporation took place last summer, and he announces that he was not identified with the company when it is alleged to have violated proration orders of the Texas Railroad Commission in the operation of its East Texas properties. Wherritt was listed as one of the organizers of the company when the concern was mentioned with a group enjoined from violating proration by Federal Judge Jas. C. Wilson here February 7. He states in a letter to THE OIL WEEKLY, "I am not too good to violate proration, but as long as I don't do it I surely do not want to get credit for it, and never have been a party to running one barrel of oil above the commission's orders."

Making First Test of Austin Chalk in Converse Field

Shreveport, La.—Preparations were being made late last week to run a testing tool in Sandfield Oil & Gas Company's Bowman-Hicks 1, NE NE Section 26-9-13, to test an oil show secured in broken formation at base of the Austin chalk from 3230-47 feet. This is the first test in the Converse field to reach this deep a zone since two shallow producers were completed there to open a new shallow field in Sabine Parish.

The formation at the 3230-47-foot level was Austin chalk, sandy shale, and sand, all but the last core being lost. Considerable oil was present in the core recovered. Should production be found in this horizon it would be the first in that zone in Sabine Parish. Zwolle produces from a marl and chalk at the 2100-2700-foot zone, just above the Ozan, and Pleasant Hill and Spring Ridge produce from the lower Cretaceous below the Washita.

However, previous oil shows have been had in Austin chalk in Sabine Parish. At Blue Lake (West Zwolle) R. L. Gay, Trustee's Sabine Lumber Company 2, Section 23-7-14, had an oil show in this formation at the 3500-foot level, as did L. M. Emlet's Bowman-Hicks No. 7, Section 14-7-14. J. J. Kean's Belton 1, Section 31-9-13, four miles west of Sandfield Oil & Gas Company's present test, had broken Austin chalk from 310-414 feet, showing gas and oil and then 11 feet of soft formation before topping lower Cretaceous. A bad casing later led to junking this well. Elevation of Belton 1 was 232.7 feet and of Sandfield's test, 301.7.

Seven-inch OD casing has been secured and will be cemented at 2876 feet in Mrs. Aleene Ibach, Trustee's Rambin Estate 1, NW NE Section 32-11-11, DeSoto Parish, which logged 16 feet of sand and sandy shale showing oil and gas from 2876 to 2892 feet; elevation is 216.5 feet. The formation is definitely Tokio. Owners said the gas pressure was so strong that they dare not attempt a drill stem test. Eighteen-pound mud was used to hold in the well pending running of casing.

Pat Marr's Caldwell 1, SW NE Section 23-16-5w, Bienville Parish, was shut down last week at 3400 feet.

In Bossier Parish, Cryer Oil Company's Cryer 1, Section 25-19-12, is reaming out at 1000 feet.

In Caddo Parish, Caddo Prairie Development Company's Hawkins 1, SE SW Section 14-22-15, was drilling below 1800 feet. Gibson Oil Company, in the same parish, is moving in rig for J. H. Dominick 1, NE SW Section 31-23-14, northwest of the Miller's Bluff area in Bossier Parish, that has shown for production at the 3000-foot level in the Cartersville sand.

In Claiborne Parish, United Gas Public Service Company's newest 4500-foot test, M. E. Temple et al 1, SE SE Section 21-23-7w, is drilling below 640 feet. Its other 4500-foot wildcat in the same parish, Meadows 1, Section 13-21-5w, is still waiting for cement to set on 9⅝-inch casing cemented at 3882 feet.

In DeSoto Parish, E. T. Oakes continues alternately coring and reaming in the lower Cretaceous in Johnson 1, Section 30-13-15, his latest core last week having been at 4606 feet in hard gray lime and dark shale; elevation is 288 feet. In the same parish, Jack Whitson's Sanders 1, SW SW Section 19-11-13, has hole cleaned and is ready to resume at 2765 feet after a shutdown.

DeSoto Brothers Drilling Company has resumed drilling its shallow test, Smith 1, Section 11-10-8w, Natchitoches Parish, being below 470 feet. In the same parish, Natchitoches Petroleum Company's Edenborn 1, SW NE Section 4-11-6w, has shut down for fuel at 2815 feet.

In the Converse area of Sabine Parish, J. Alford and Cleary Brothers have abandoned locations for Patrick 1 and 2, SW NE Section 11-9-13. Although Evans Brothers' Cranford 1, SE SE Section 20-9-13, between the two producers in the Converse field, from bailing, indicates it would make a 15 to 20-barrel daily pump-

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er, arrangements are being made to treat it with acid at 1575 feet in chalk. In the same area, Feazel and Davenport's Aaron & Musser 1, NW NW Section 32-9-13, has shut down for fuel at 855 feet. Bad roads, due to heavy rains, are making access to many locations almost impossible. Head and Lambert's Edwards 1, SW NW Section 29-9-13, is bailing a little oil at 1601 feet in chalk after plug was drilled in eight-inch casing set after returns were lost. They plan to cut another core and use acid. R. T. Henderson's Sistrunk 1, SE NW Section 9-9-12, five miles northeast of the Converse producers, which was treated with acid and showed considerable oil in chalk at 2000 feet, is drilling ahead at 2020 feet. H. C. Lessenger's Bowman-Hicks 1, NW SW Section 13-9-13, was spudded during the week.

Another Sabine Parish wildcat, W. M. Ungerman's Cross 1, SW SE Section 25-8-11, tested dry at 2635 feet and shut down.

In Union Parish, Goens et al are testing a gas show at 2090 feet in Union Sawmill 1, Section 7-22-2e. Mrs. Mamie S. McCurry's Donner and Richardson 1, Section 13-19-9e, was shut down at 1550 feet.

Wildcat Work in Arkansas Again Falls to Low Level

Texarkana, Ark.—Wildcatting was a low ebb in Arkansas last week, the drilling campaign in Miller County following in the wake of three producers having considerably subsided. However, 3½ miles southeast of the three producers in Sections 33-15-26 and 4-16-26, Duluth-Arkansas Oil Company's H. Z. Price 1, NE NE Section 18-16-25, was reported by the owners to be coring sand and streaks of shale at 2690-2700 feet.

Half a mile west of production, Jenkins Brother's Ben F. Smith 1, SE SE Section 32-15-26, which missed the pay sand and went into red beds, is being deepened, was drilling last week below 3315 feet. Another Miller County test, a southeast offset to production, Magnolia Petroleum Company's E. V. Olivet 1, NW NE Section 4-16-26, is drilling below 1290 feet. Rig is being moved in for Byrd et al's Miller Land & Timber 1, SE SE Section 29-18s-27w, on a 10,000-acre block. Other Miller County tests were unchanged from the preceding week.

In Cleburne County, Fred J. Craver's Donithan Lumber Company 1, Section 34-11-9, is drilling below 3730 feet.

In Columbia County, Kendall Oil Company's Fullenwider & Kitchen 1, NE NE Section 13-17-22, is drilling below 2640 feet.

In Little River County, American Portland Cement Company's Fee 1, SW NE Section 21-12s-32w, is drilling around 1810 feet.

In Lincoln County, drill stem that was stuck has been recovered and hole is clean to resume in Lawrence B. Cook, Trustee's McGehee Plantation 1, NE SW Section 5-8s-7w.

The status of other wildcat tests in Arkansas was reported unchanged from the week before.

Miller County Gets Only Arkansas Drilling Permit

El Dorado, Ark.—Only one permit to drill was issued in Arkansas during the week, it being the permit for Magnolia Petroleum Company's E. V. Olivet 1, 150 feet south and 619 feet east of NWc NW NE Section 4-16-26, Miller County.

Only Arkansas Completion Dry Hole in Union County

El Dorado, Ark.—Three new locations, one for a test contemplated as a 5000 foot hole, were made in Union County, Arkansas, last week. The other two new tests are wildcats.

One completion, a dry hole in Union County, was recorded in Arkansas for the seven-day period ending February 22.

The contemplated 5000-foot test is F. C. Henderson's J. F. Sample Company 1, located 330 feet south and west, NEc NW NW Section 1-18-16, Upland district. Materials are on location. Six miles south of the Urbana field, J. O. Beard has materials on location for G. W. Dugal 1, located 660 feet south and east, NW SW Section 13-19-13. In the Lapile district another wildcat is Thomas Nash et al's Union Sawmill Company 1, located 330 feet north and east, SWc NW NE Section 19-18-11.

The one completion in Arkansas last week follows:

Company, Well and Location	Initial Production Bbls.	Depth
Union County (Urbana)—		
Wilson & Chapman, Doty Norman A-1, 3-18-13.....	*	1678

*Failure. †Junked. ¶Million cu. ft. gas.

Second of Mississippi Delta Tests Rigging Up

Jackson, Mississippi. — Westbrook-Thompson, Stewart and West have made a location and are moving in rig for their second of five tests in the Mississippi delta. The new test is Dockery 1, SE SW Section 21-22n-4w, Sunflower County; elevation is 140 feet.

The rig used on the same operators' School Board 1, SE SE NE Section 16-20n-4w, junked at total depth of 3702 feet, will be used on the new test.

In George County, Southeast Mississippi, Gulf Refining Company is reported to have pulled in derrick, with drill stem in the hole at 2000 feet, in Pascagoula Hardwood Lumber Company 1, Section 12-2s-8w.

In the same county, Pelican Oil & Gasoline Company, Incorporated, (A. C. Glassell et al), has derrick up and is moving in rig for Luce Packing Company 1, amended location, which is 1320 feet north and east southeast corner Section 25-1s-6w. This company has a block of approximately 75,000 acres in this part of Southeast Mississippi and this location is on the Lucedale Ridge. A drilling obligation calls for spudding by March 15.

Lionel Petroleum Company is moving in rig for J. L. Gaddis 1, Section 7-7n-3w, Hinds County. In Jasper County, Spraragen & Jones' Bank of Philadelphia 1, SE SE Section 35-3n-12e, is coring a sandy boulder at 5024 feet. Stauffer and Kouri have a string of casing at location to set in Bond 1, SW SE Section 18-2n-14w, Lamar County, at total depth of 3026 feet. P. J. McAlpine is coring hard sandy slate at 2709 feet in Charles Rye 1, SE SW Section 22-15s-17w, Monroe County, looking for the sand that showed gas at this level in a test 1320 feet to the northeast of his location.

In Newton County, Dalton Development Company claim to be in black shale at the 3600-foot level, in Majure 1, SW SE SE Section 25-6n-11e

In Wilkinson County, Foster Creek Oil Corporation's Foster Creek Lumber Company 1, Section 14-2n-2w, was shut down at 1815 feet in sandy shale, while another boiler was installed.

Plan Leak Detection by Odorizing Jackson Gas

Jackson, Miss.—Plans to odorize the gas in a number of gas wells in the "hot spot" of the Jackson gas field in Section 12-5-1e, Rankin County, were recommended to a meeting of approximately 30 operators of the Jackson field at a conference February 16, held with the Mississippi State Oil and Gas Board, as a way to find what wells are leaking gas around the casing.

The leaking gas, it was reported, has been charging some of the shallower sands above the Midway chalk around 2400-2450 feet where the gas in Jackson's more than 100 gas wells is found, and even in a few instances the gas has been leaking around the surface casing.

The committee appointed to make the investigation is composed of F. Ferguson, independent operator; A. J. Lachle, production superintendent,

United Gas Public Service Company; and L. P. Love of Love Petroleum Company. H. N. Toler, deputy state supervisor of oil and gas, is acting with the committee, which was appointed by Dr. George C. Swearengen, state oil and gas supervisor, who presided over the conference.

Jackson gas field is in and around the city of Jackson and leaking gas is therefore a double menace. Furthermore, due to the porosity of the chalk in which the gas is found and the proximity of the water level to the gas producing level, should a well get out of control and crater irreparable damage might be done to the field in a short time. None of the gas wells in Jackson is tubed.

Contract Deep Test in Washington Gas Area

Pasco, Wash.—Northwest Oil & Gas Company is reported to have let a contract recently to the Sheldon-Burden Company for a 6000-foot test to be drilled in the Pasco gas field. There are now 16 wells in this field, all producing from basalt. The gas is found from 700 to 800 feet. The new operation will be the first deep test in the district.

Dutton Creek Gas Piped To Laramie, Wyoming

Laramie, Wyo.—For the first time in the history of the city, Laramie, in Albany County, southern Wyoming, is enjoying natural gas for fuel. The Rocky Mountain Gas Company, subsidiary of Ohio Oil Company, started furnishing gas on February 14. Supply is being brought to the city from the Dutton Creek gas field, 25 miles northwest of here. The old oil pipe line from the Rock River oil field to the abandoned plant of Standard Oil Company (Indiana) at Laramie, is being used as a part of the transportation system. The new enterprise represents an investment of some $750,000.

Cut Bank Field Expected to Be Active Spot in Spring

Cut Bank, Mont.—Little progress is reported from the various tests under way in the Cut Bank field, the extreme weather of last week having brought most operations to a standstill. No new wells were able to start and no new locations were spotted. Until the weather is more favorable it is expected that work in the field will be decidedly slow. However, once the spring is assured, it may be expected that this field will be the most active by many tests in the Rocky Mountain region.

Hobbs Starts Fourth Year of Proration Without Violation

Hobbs, New Mexico.—Rated as one of the seven prolific oil fields in the United States having an established production of major proportions, the Hobbs field is now entering its fourth year with such qualifications. It has enjoyed an untarnished reputation in carrying out a voluntarily adopted proration plan under the supervision of the State of New Mexico, and no charges of violations have been preferred against any of the 21 major and independent companies sharing in the output of the field.

Accumulated production of the Hobbs field up to January 1, 1933, amounted to 29,580,737 barrels of 36-36 gravity oil from 178 flowing and pumping wells in the 4000-4200-foot saturated lime horizon. This yield has afforded an average oil recovery of 166,184 barrels per well since first flowing production in commercial quantities was scored in July, 1928, by the wildcat test of Midwest Refining Company (now Stanolind Oil & Gas Company) on State fee land in NEc Section 9-19s-38e.

The revenue derived from the oil production up to the first of the year is believed to be sufficient to amortize the cost of all wells drilled, but in a few individual cases operators are considerably in the "red" through having wells of a small potential. Other factors responsible for wells not having returned their original cost along with the average can be charged to deferred development, and forced drilling of more than one well to a 40-acre unit, with the resultant penalty under the proration plan followed. Profits earned through the sale of casinghead gas to the two natural gasoline plants in the field have been sufficient in most instances to balance with lease labor expense.

Although the discovery well at Hobbs indicated a field in the making in July, 1928, it was not officially completed until the following year. The area being isolated about 30 miles from the nearest commercial production, and further removed from rail or pipe line transportation, it did not begin to command attention until the latter part of 1929 when a few scattered completions in what later proved to be the south portion and less prolific section of the structure indicated a sizeable oil area had been thrown open to development.

The tip off well that a flush field existed came about through the efforts of Humble Oil & Refining Company to extend the producing area several miles to the northwest in drilling D. A. Bowers 1, C NE SE Section 30-18s-38e. This outpost spudded June 10, 1929, and after numerous delays brought about through oil and gas blowouts in

Hobbs Field, New Mexico

Company—	Total Wells	No. 40-acre Units	Daily Potential Production	Production Prior to 7-10-30	Production During Proration	Production to Jan. 1, 1933
Stanolind Oil & Gas Co...	41	39	151,637	170,693	3,860,989	4,031,682
Shell Pet. Corp.	22	20	168,542	283,004	3,699,555	3,982,559
Humble Oil & Ref. Co...	14	13	146,234	426,232	2,980,460	3,406,692
Amerada Pet. Corp.	13	13	139,783	38,058	3,209,071	3,247,129
Gypsy Oil Co.	12	11	105,331	19,657	2,240,764	2,260,421
Ohio Oil Co.	10	9	66,228	.....	1,898,450	1,898,450
Continental Oil Co.	10	10	87,653	.....	1,839,168	1,839,168
Tide Water Oil Co.	8	5	50,472	7,854	1,458,683	1,466,537
Getty Oil Co.	4	4	46,554	.....	1,282,158	1,282,158
Empire Gas & Fuel Co...	7	7	46,539	.....	1,276,868	1,276,868
The Texas Co.	7	7	42,794	.....	1,182,728	1,182,728
Sun Oil Co.	4	4	15,269	.....	831,570	831,570
The California Co.	5	3	22,074	.....	588,401	588,401
T. P. Coal & Oil Co.	3	3	13,175	20,835	458,844	479,679
Repollo Oil Co.	5	4	11,861	15,857	437,553	453,410
Landreth Prod. Corp. et al	3	3	12,943	.....	417,075	417,075
Skelly Oil Co.	4	4	16,762	.....	346,048	346,048
Atlantic Oil Prod. Co.	2	2	6,857	.....	234,331	234,331
Walker Oil Corp.	2	1	576	27,087	166,407	193,494
Mid-Continent Pet. Corp.	1	1	2,003	.....	81,753	81,753
Magnolia Pet. Co.	1	1	1,981	.....	80,584	80,584
Total	178	164	1,155,268	1,009,277	28,571,460	29,580,737

the upper section of the lime, was completed in January, 1930, rated at 8500 barrels of oil and 8,000,000 cubic feet of gas daily. This completion marked the beginning of an aggressive development program. It attracted the first market outlet of any description, other than tank truck sales, when Humble Pipe Line Company extended an eight-inch trunk line into the field, and began running oil May 12, 1930. Atlantic Pipe Line Company followed with a similar line, and began running oil July 8, and two days later Shell Pipe Line Corporation began running oil via an eight-inch carrier. Oil handled by each of these carriers was routed south via West Texas fields, and shares space with the prorated output of the latter in reaching refining centers on the Texas Gulf Coast and the Middle West.

Prorated Since July, 1930

Confronted with a limited market and pipe line congestion, the lease owners at Hobbs adopted proration effective July 10, 1930. The field then had produced 1,009,277 barrels of oil, while production during proration enforcement to the close of 1932 amounted to 28,571,460 barrels, making an aggregate of 29,580,737 barrels.

C. G. Staley, former State Geologist for New Mexico, was engaged by the operators' proration committee to assume charge of the proration, and has continued in this capacity. Based on experience previously gained in prorating Hendrick, Yates and other West Texas areas, the Hobbs operators adopted a 40-acre unit spacing, with average well potential per unit used to penalize unnecessary drilling. The proration allowance of the field is limited to combined purchases of five companies serving the field. The allowable is distributed on a basis of 75 per cent for average unit potential, and 25 per cent for acreage.

According to official figures released by Umpire Staley on January 1, 1933, the 178 producers had a combined open flow potential of 1,155,268 barrels daily, using average potential on nine 40-acre units bearing two wells on each, and two units with three wells on each. Considering the amount of development work involved the crowding of wells in the field has been held to a minimum.

The field is credited with having 7640 acres of proven acreage subject to oil drainage. It has recovered an average of 3872 barrels per ace. Only ten wells are required to pump or agitate to make their proration allowables.

Open to Northwest

The productive limits of the Hobbs structure are considered to be defined, except to the northwest. This northwest trend is open for further extensions along a two mile front to the east and west, with some of the largest wells included in the group forming this northwest border. Exploration work is underway to throw additional light on the extent of production to the northwest, with indications that considerable more acreage will be taken in.

Despite the orderly production methods followed since the inception of proration July 10, 1930, the Hobbs field has been hard hit by sulphur water intrusion on the west flank and south end of the structure. More than a score of flowing wells, carrying a high potential rating, have been so badly crippled by water flooding as to sacrifice a portion of the proration allowable. Experiments have determined that this water is moving in mostly through the top section of the oil and gas bearing lime section due to excessive consumption of gas occupying the upper portion of the horizon. Three wells have been successful in attaining complete water shut offs by running packer on tubing to shut off the upper oil and gas zone, although each of these wells had been unable to flow their allowable production because of water. Installation of packer on tubing revived the flow of pipe line oil to more than the earned allowable. Other wells making water are to be doctored in a similar manner.

Inroads made by the water table on the west flank of the structure have satisfied all operators that orderly production and conservation of the gas pressure must be observed to realize a normal flowing life from the field. Any disruption of proration would materially reduce the yield per acre, and pyramid lifting costs per barrel.

At the start of the present year the allowable production for Hobbs field was 21,206 barrels daily, but purchasers have since augmented their nominations to about 30,300 barrels daily. The current outlet permits an average yield of about 170 barrels daily per well. The oil is placed on the same price basis as that prevailing in West Texas, being 30 cents per barrel at present. The average price for Hobbs crude in 1932 was about 60 cents per barrel.

Alkali Butte Deep Test Continues Operations

Riverton, Wyo.—In spite of sub-zero weather, The Texas Company continues drilling its deep test in the Alkali Butte field in Fremont County, State-Ridgway 2, SW SW Section 38-34n-95w. At last report the hole was coring at 4746 feet, with the drill still reported in the Morrison formation in which a flow of six million feet of gas was developed two weeks ago. This is the deepest test ever drilled in the field, and will continue still deeper with the Sundance sand as the next objective.

Cody, Wyo.—Because of weather conditions, W. O. Taylor and associates of Cody and Billings have not been able to continue with Hoskins 1, Section 25-56-97, in the Byron field, northern Wyoming. The well is standing with the surface casing set at 32 feet. It is located on an island in the Shoshone river in the heart of the field.

Weather Delays Pumping Frannie Field Producer

Frannie, Wyoming.—Continental Oil Company has not succeeded in putting Northern Pacific 1 in the northern extension to the Frannie field, extreme northern Wyoming, on the pump because of the extremely had weather which has prevailed in the district. Hole is bottomed in the Tensleep at 3318 feet and is now standing awaiting storage. It is reported that it will make a good producing well and has the distinction of adding a half-mile of proved territory to the field. Location is on Section 23-59-98w, Park County.

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New Jal Completion Largest In New Mex. Outside Hobbs

Hobbs, New Mexico.—The big oil and gas producer reported last week as having been scored in the Jal field, Lea County, by Continental Oil Company and The California Company's M. F. Sholes 1-B, CSW NW Section 13-25s-36e, has been equipped with three-inch tubing and pinched to 90 barrels daily. This well is the largest in the state outside of the prolific Hobbs field, and flowed 95 barrels of oil hourly, with gas production rated at 40,000,000 cubic feet daily. Tubing was set at 3362 feet, or eight feet off bottom. The well was placed on a 6/64-inch choke February 21, and flowed at rate of 90 barrels of oil daily, carrying 1150 pounds back pressure on tubing and 1240 pounds on the seven-inch casing. The gas-oil ratio is placed at about 6300 cubic feet per barrel, but an effort will be made to curb this gas consumption.

A new location for the Hobbs field released last week is to be The California Company et al's McKinley 2, located 660 feet from the west and 1980 feet from the north lines of Section 20-18s-38e.

Unusual Storm Halts Work In Southeast New Mexico

Santa Fe, N. M.—Almost unheard of in the sunny state of New Mexico, and particularly in the extreme southeastern corner, snowstorms and blizzards of the utmost fury swept across that section recently and left oil operators helplessly shut down at all tests in various sectors. Temperatures ranged across the state from 17 to 35 degrees below zero, and were more reminiscent of what should be expected in northern Montana than of an experience in New Mexico. Many drilling crews suffered from exposure, frostbite, and cold, and there were many instances of near tragedy attendant upon the storms.

Norrins Realty Company at last report was drilling around 3640 feet with rotary in Pajarito Grant 1, NE Section 22-9n-2e, Bernalillo County. The company reports that it does not have rig up yet for Galegas Grant 1, NW NW Section 19-11n-4e, but that it expected to start moving in to location soon.

In Chaves County, Warman Oil Trust has shut down for fuel at Weldon & Hoar 1, SE Section 9-14s-25e. Total depth is 585 feet.

Landowners Oil Company planned to resume this week at State 1, NE Section 16-1s-27e, in DeBaca County. This well shut down at 5685 feet for engine repairs.

Anton Chico Development Company, SW Section 20-9n-17e, was last reported to be drilling in Permian red beds below 1467 feet. The casing was lowered and set at 1276 feet for a water shutoff. New Mexico Producing & Refining Company's McMullen 1, Section 24-5n-16e, Guadalupe County, is ready to resume at 4507 feet.

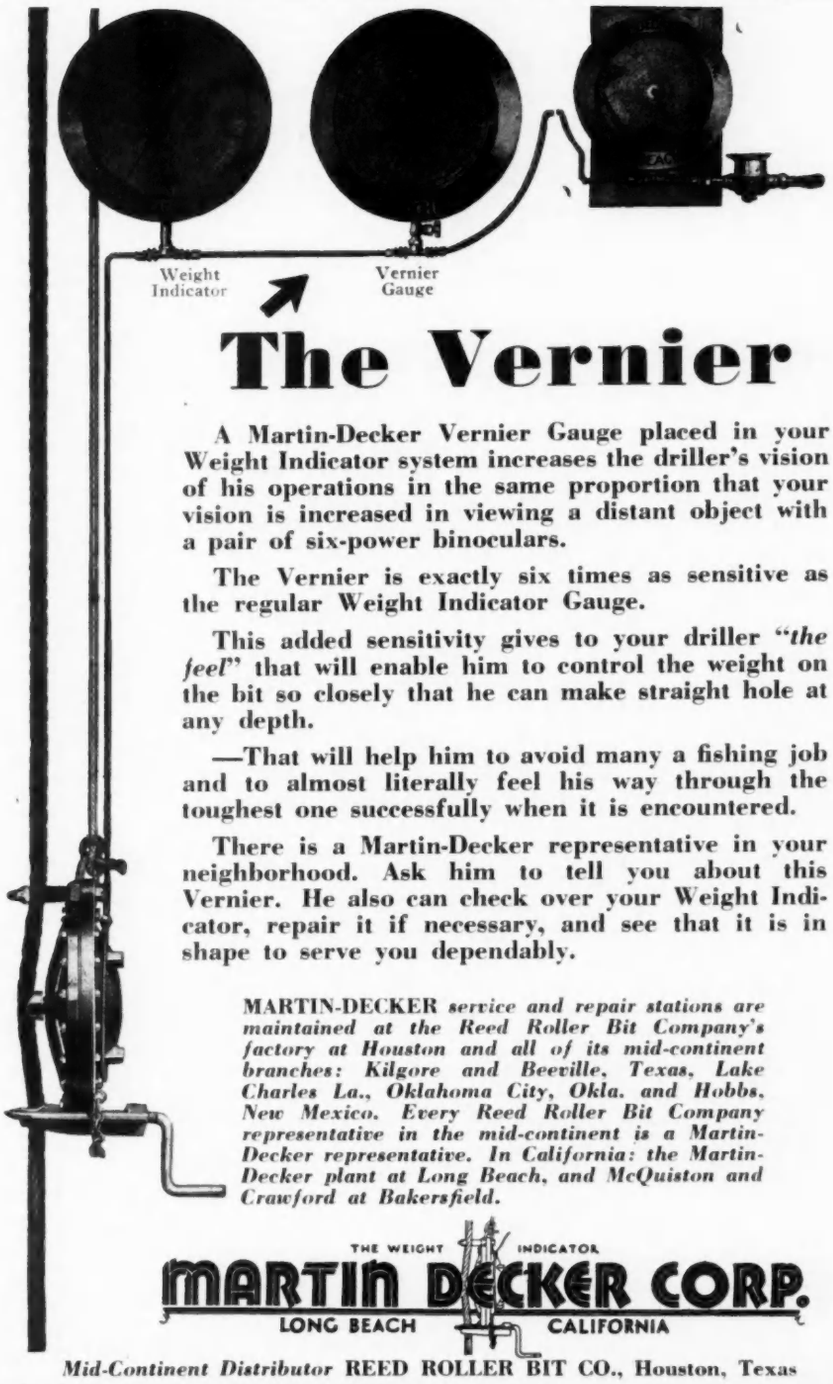
In Rio Arriba County rig is up for Pan-States Oil Company's test to be drilled on Section 26-3s-1e.

California Corporation has a location for a wildcat test to be drilled on Section 3-29n-11w, San Juan County.

Western Natural Resources Corporation's test on NE Section 5-6n-1e, Valencia County, is drilling below 4112 feet in brown sandy formation. Some indications of oil and gas are reported.

Colorado Activity Not to Increase Before Spring

Denver, Colo.—Windstorms and excessively low temperatures recently have been responsible for the shutdown and slowing up of all operations in Colorado. Little increase in activity can be expected now before the advent of spring weather. In the Greasewood Flat district in Weld County, northeastern Colorado, Continental Oil Company and others are reported drilling in sand below 3520 feet in Anthes 1, NE NE Section 24-8n-59w. In the Fort Lupton area, also in Weld County, Retter Oil Company's Cronin 2, Section



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This added sensitivity gives to your driller *"the feel"* that will enable him to control the weight on the bit so closely that he can make straight hole at any depth.

—That will help him to avoid many a fishing job and to almost literally feel his way through the toughest one successfully when it is encountered.

There is a Martin-Decker representative in your neighborhood. Ask him to tell you about this Vernier. He also can check over your Weight Indicator, repair it if necessary, and see that it is in shape to serve you dependably.

MARTIN-DECKER ***service and repair stations are maintained at the Reed Roller Bit Company's factory at Houston and all of its mid-continent branches: Kilgore and Beeville, Texas, Lake Charles La., Oklahoma City, Okla. and Hobbs, New Mexico. Every Reed Roller Bit Company representative in the mid-continent is a Martin-Decker representative. In California: the Martin-Decker plant at Long Beach, and McQuiston and Crawford at Bakersfield.***

THE WEIGHT INDICATOR
MARTIN DECKER CORP.
LONG BEACH CALIFORNIA

Mid-Continent Distributor **REED ROLLER BIT CO., Houston, Texas**

24-1n-66, had resumed drilling at 742 feet when the storm broke, and no further work was possible.

No reports have been received from other wildcat operations in various parts of the state. It is generally believed, however, that no work is under way because of the severe weather.

In the Florence district the test of the Cherry Creek Placer Company, Locas 1, SW SW NE Section 32-18s-69w, was last reported drilling in hard light lime at 1100 feet. This opeartion is in Fremont County.

In Routt County, Mid-Colorado Petroleum Company is still waiting for casing with hole bottomed at 2200 feet in Omholt 1, SE Section 29-4n-87, in the Williams Park district.

Akron Oil & Development Company's Gilcrest 1, SW SE SW Section 22-3n-53, Fremont Butte, Washington County, is standing shut down after having spudded a 24-inch hole. The company has recently increased its capital stock to $500,000; it has a block of some 13,000 acres on the structure.

In Larimer County, about 2½ miles northwest of the Berthoud field, Art Deininger and associates have started up in Kistler 1, Section 2-4n-70. At last report the test was drilling below 280 feet in limestone.

Northern Montana to Get Exploration Next Summer

Helena, Mont.—There are well founded reports in Havre, northern Montana, to the effect that a considerable amount of exploration work is to be done on the Box Elder and Signal Butte structures this summer. C. R. Bronson has been active in the reinstatement of prospectors' permits on both structures, and it is said that Louis B. (Tip) O'Neil will be instrumental in having two tests drilled on the Box Elder dome, while Bronson will be in charge of work at Signal Butte.

Continued cold weather has prevented any progress at other wildcat locations in the state for the last 10 days. West of Cut Bank two wildcats, both on the Blackfeet Indian reservation, were to be spudded this week. Santa Rita Oil & Gas Company's Blackfeet 1, SW NE Section 15-36-6w, is rigged and ready to spud as is the Fulton Petroleum Company's Haggerty 1, NE Section 16-34n-6w.

It was hoped that weather conditions might permit Rice-Fulton Development Company to resume work at its interesting wildcat well on Devil's Hole structure, Section 20-2n-23e, in Yellowstone County. Last reported total depth at this well was around 2350 feet. It is believed that first Frontier will be found around 2550 feet, Dakota at 3500 feet, and Lakota at 3700 feet.

Of the several other wildcat tests under way in various parts of the state, none report any progress. Corbett Royalty Company's test, SW SE Section 1-6s-23e, Carbon County, is standing at 1245 feet, and Jack Creek Oil & Gas Company's No. 2, SE Section 15-7s-23e, is bottomed at 1400 feet.

In Fergus County, Melton Corporation's No. 1, SW Section 24-31n-17e, is bottomed at 3305 feet. It will run casing for water shutoff before drilling deeper.

Wyoming Wildcats Still Hampered by Bad Weather

Casper, Wyo.—The Ohio Oil Company's semi-wildcat test on the Allen Lake structure near Medicine Bow, in Carbon County, Kanawha 1, SW NW NE Section 34-23n-79w, is last reported reaming to lower casing, with hole bottomed at 1427 feet on top of the Dakota formation. Considerable gas is showing. A test of the Muddy sand failed to produce gas in commercial quantities. If and when this structure is proved for gas production, a line will be laid to connect with that from Dutton Creek to Laramie to afford an augmented supply of fuel for that city.

S. Marvin James and associates of Denver have spudded and shut down in the test on SW SW Section 10-13-76, on the Riverside ranch in Albany County. The drilling is being done with a Fort Worth spudder, and contract is for 2000 feet if necessary. Production is, however, expected at a shallower depth.

For the purpose of drilling tests on the Shawnee structure, east of Douglas in Converse County, the Wyoming Southern Oil Company has recently been organized by Douglas and Cheyenne men. The new concern has taken over the R. G. Taylor holdings on the structure for development. Phillips Petroleum Company drilled a number of core drill tests on the structure two years ago. Both oil and gas were found at shallow depths, but the company decided not to attempt a deep test after it failed to secure controlling acreage on the structure.

Test on the Platte River dome wildcat structure, eight miles southwest of Casper, being drilled by the Leo B. Murphy interests, is shut down at 826 feet, with hole full of water from the Dakota. It will be necessary to wait for more favorable weather before resuming work at which time casing will be run for a shutoff before drilling deeper. Location is SE NW Section 29-33-80, Natrona County.

Other wildcat operations in the state are shut down because of bad weather.

Wildcat Attempts Two Mile Extension of Broomfield

Mt. Pleasant, Mich.—Spudding operations were to start this week on Otis Denslow's Cook 1, Isabella County, Broomfield township, Section 2, a wildcat location which will aid in determining the northeastern boundaries of the Broomfield natural gas pool. The test is two miles out of the proven pool of 14 wells which have a combined open

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flow of 56,238,000 cubic feet daily. Proven acreage by the 14 wells is approximately 3500 acres.

Success or failure of the test is seen as an important factor in natural gas development in Central Michigan as pipeline projects are now held to be dependent in a large measure on proving up a greater potential supply of gas and adding to the proven acreage.

In Midland County the Columbia Oil & Gas Company is driving pipe on a new hole on the Travis 1, Section 32, Greendale township, losing the first hole, total depth 250 feet.

Eight-inch casing is being reamed down on Ira Scheifley's Fur Farm Syndicate 1, Clare County, Section 21, Summerfield township. 1050 feet.

Drilling operations have been resumed on the Newago Oil & Gas Company's Bates 1, Newago County, Section 12, Sherman township, at 6120 feet.

Varner and Lockwood's Flood 1, Oceana County, Section 34, Pentwater township, is drilling at 900 feet.

In Mecosta County James M. Taggart's Barton 1, Section 11, Austin township, is driving pipe at 300 feet.

Oil Properties Corporation's McNitt Estate 1, Wexford County, Section 10, Harning township, is shut down at 3200 feet in the Traverse with a hole of water.

In St. Clair County Snavely and Craft's Norman 1, Section 22, Grant township, is drilling at 1550 feet.

Spudding operations were started this week on L. G. Thompson's Ryal 1, Midland County, Section 3, Mt. Haley township.

Eight Permits to Drill Granted in Michigan

Mt. Pleasant, Mich.—Pure Oil Company this week took out drilling permits for seven wells, one in pure wildcat territory and six in the Chippewa-Greendale pool of Central Michigan.

The wildcat will be drilled into the Dundee as an oil test. It will be located on the George Vertengruber 1, Tuscola County, Vassar township, NE SE SE Section 27.

Six other Pure Oil Company locations, all in Midland County, Greendale township, follow:

Bond 1, Section 14, NW NW NW; Harris 4, NW NE SW Section 15; Mullet 7, NE NE NE Section 15; Reed 6, SW NE SW Section 11; Novak A2, NW NE SE Section 7; McCann 2, SW SE NE Section 7.

Another location also was made this week, Mammouth Petroleum Corporation's Marseilles 1, Isabella County, Vernon township, NW NW SE Section 23.

Extension of Central Michigan Field Indicated

Mt. Pleasant, Mich.—Indications of extensions of the present developed oil producing limits in Central Michigan and the possibility of commercial natural gas deposits from the Dundee or Monroe formation (4000 to 4500 feet) were shown in development this week.

Michigan Pacific Oil & Gas Company's Otway 2, a semi-wildcat location in Midland County, Porter township, Section 22, SE NE SW, was completed in the Dundee lime, total depth 3541 feet, for 150 barrels of oil on initial, producing from 43 feet in the lime.

Otway 2 is a half mile northwest of a well developed two years ago by the same company for 50 barrels a day from the Dundee and later increased to 200 barrels by acid treatment. The Otway lease is about 10 miles southeast of the Chippewa-Greendale pool and about six miles southeast of the Yost lease recently developed with commercial results from the Dundee lime.

Offset acreage is held by the Pure Oil Company, Shell Petroleum Corporation, Sun Oil Company and Stanolind Oil Company, which will result in immediate drilling of other tests offsetting the Otway. Pure is now moving in a rig to drill an east offset.

Strange Oil & Gas Company's Littlefield Ranch 1, Clare County, Surrey township, Section 9, SE SW SW, a wildcat, will be plugged and abandoned at 4156 feet as a dry hole. However, the test is believed to be of considerable importance in as much as a show of gas, gauged at 30,000 cubic feet, was struck at 4120 feet, 81 feet in the Dundee. Water was four feet deeper.

The gas show was regarded as important as showing the possibility of commercial gas development from the Dundee at around 4000 feet. The present developed gas pools in Central Michigan produce from 1300 to 1500 feet from a stray sand and the Marshall.

Extension of the northwestern end of the Chippewa-Greendale pool was indicated by the Theodore Oil Company's Kane 1, Isabella County, Chippewa township, NE NW SE Section 3, located about a half mile out of the proven district, which was completed for 100 barrels a day from 3590 feet.

Company, Well and Location	Initial Production Bbls.	Depth
Midland County—		
Michigan Pacific Oil & Gas Co., Otway 2, Porter twp., se ne sw Sec. 22.....	150	3541
Isabella County—		
Theodore Oil Co., Kane 1, Chippewa Twp., ne nw se, Sec. 3	100	3590
Clare County—		
Strange Oil & Gas Co., Littlefield Ranch 1, Surrey Twp., se sw sw, Sec. 9..	*	4156

*Failure. †Junked. ¶Million cu. ft. gas.

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1—12 x 12 Gumbo Buster Twin Drilling Engine mounted on Steel Foundation.
1—H. 46—4 Speed R. B. Emsco Drawworks with 25 x 34 Grooved Drum for 1⅛" Wire Line. Complete with Chain Guards, Steel Headboards and Braces and Automatic Cat Head.
1—25½ Type D.A. Emsco R. B. Rotary Table with Bushings.
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1—5-Sheave Emsco Crown Block complete with Catline Sheave attached.
2—14½ x 7¼ x 20" Gardner Denver Mud Hog Pumps.
4—125 H.P. 250 lb. W.P. Titusville A.S.M.E. Code Boilers.
2—8 x 4 x 12" Cameron Boiler Feed Pumps mounted on Steel Skids.
1—3 K.W. Frost Vertical Generator.
1—9" Ideal Wigle Spring Casing Hook.
1—6" Emsco Oil Bath Swivel.
1—6" x 38' Kelly.
1—7 x 12' Steel Tool House.

All High Pressure Boiler Fittings, Pump Manifold, Steam Lines and miscellaneous material included, such as Elevators, Tongs, Weight Indicator, and etc.

Compare these prices with new and if interested wire, write or phone.

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P. O. BOX 1093 **OKLAHOMA CITY**

50 Completions Recorded In Eastern States Fields

Cleveland, Ohio. — With producing oil wells recorded in Indiana, Kentucky, New York, Ohio, Pennsylvania and West Virginia, Eastern States completions totaled 50 for the week. Of this number, 19 were producers with an aggregate initial yield of 617 barrels, 22 were gas wells, nine were failures. Indiana and Ohio led in number of wells completed, each being credited with 13. The best oil well of the lot, however, was a lone Kentucky producer which gauged 500 barrels initial production.

A detailed tabulation of the completions follows:

Pennsylvania

Company, Well and Location	Initial Production Bbls.	Depth
Allegheny County—		
Oliver Miller & Co., Cable 1...	3	....
Bradford Field—		
South Penn Oil Co. Farm 4202, tr. 3	3	....
Forest Oil Corp., Fee (5 wells) . .....Pressure		....
Forest Dev. Corp., Fee, (5 wells) . .....Pressure		....
H. J. Walter Oil Co., Moore 8 . .....Pressure		....
Hamblin Estate, Eisert 6...	4	....
Eisert 7 . .....Pressure		....
Reidy & Co., Reidy 8.....	2	....
Olean Petroleum Co., Fee 20	12	....
Clarion-Venango Field—		
Fryburg Motor Co., Sterner 6..	¶1	....
Anderson & Rice, Stull 10 ..	2	....

New York-Penn Gas Field

Company, Well and Location	Initial Production Bbls.	Depth
Bingham & Co., Caparula 1	¶3	....
Vashbinder & Co., Addison 1 . .....¶2½		....
Carpenter & Co., Ruddick 1	¶5	....
Peterman & Co., White 1..	*	....

New York

Allegany County—		
Citizens Nat. Bank of Wellsville, Fee 4	7	....
B. L. Root & Co., Root 10	3	....
Freeman & Co., Wixon 3..	3	....

West Virginia

Cabell County—		
C. C. Wolfe & Co., Calhoun-Justice 1	¶¼	3200
Calhoun County—		
McCall Drilling Co., Poling 1	¶½	2250
Gilmer County—		
Virginia Gasoline & Oil Corp., Reynolds 1	5	1959
McCall Drilling Co., Stout 7	¶½	1900
Logan County —		
Cumberland Petroleum Co., Merrill Coal Land 8	¶¼	1442
Marion County—		
Hope Natural Gas Co., Murray 6794 . .....¶3½		2975
Roane County —		
Reedy Oil & Gas Co., Santee 1	¶¾	1770
Wetzel County		
Shimwell Oil & Gas Co., Price 1	3	....

Southeastern Ohio

Company, Well and Location	Initial Production Bbls.	Depth
Monroe County—		
Charles Baker & Co., Quigley 4	¶¼	690
Noble County—		
Scott D. F. Rohrer, Rohrer 4	¶¼	808
Washington County—		
Chesmar Oil & Gas Co., Cox 3 . .....¶1¼		1010

Central Ohio

Belmont County—		
Peters & Co., Pekario 1.....	¶¼	1788
John Lockary, Lockary 1 ..	20	2120
Fairfield County—		
Charles Blume & Co., Nye 1	5	2653
Guernsey County—		
C. C. Wharton & Co., Linn 2	*	800
Meigs County—		
Joe Rubin, Harper 2.....	¶¼	1086
DeLong & Co., Tracy 1 ...	*	1037
A. N. Bengel, Logan 2	¶½	995
Stark County—		
Sisler & Co., Sisler 5	¶1	4291
Vinton County—		
Kachelmacher Estate, Murphy 1	¶½	988
Ohio Fuel Gas Co., Hexambaugh 1	¶½	997

Indiana

Daviess County—		
J. C. Howes & Co., Ross 1....	5	....
Indiana Southwestern Gas Corp., Goslin 1	¶¼	764
Gibson County—		
Knox Engineering Corp., Sampley 1	¶9	1435
Hancock County—		
J. Harve Snyder, Hudson....	¶¼	....
Perry County—		
George Porter & Co., Reed 1	*	....
Spencer County—		
Packard Oil Co., Ray 1....	10	....
Van's Oil Co., Grass 6.....	5	....
Sullivan County—		
Jackson Hill Coal & Coke Co., Fee 1	*	2268
Tippecanoe County—		
Coats-Smith Oil Co., Methodist Episcopal Chapel 1..	*	....
Vanderburg County—		
C. M. Root, Swope 1	10	....
Maxwell Petroleum Corp., Luhring 1	*	....
J. S. Young, Iglehart Mining Co., tract 1	15	....
John R. Kmapp & Co., Euler 1	*	953

Kentucky

Knox County—		
Reed Hughes & Co., Owen 1..	500	400
Ohio County—		
Petroleum Exploration Co., Farmer 5	*	560

*Failure. †Junked. ¶Million cu. ft. gas.

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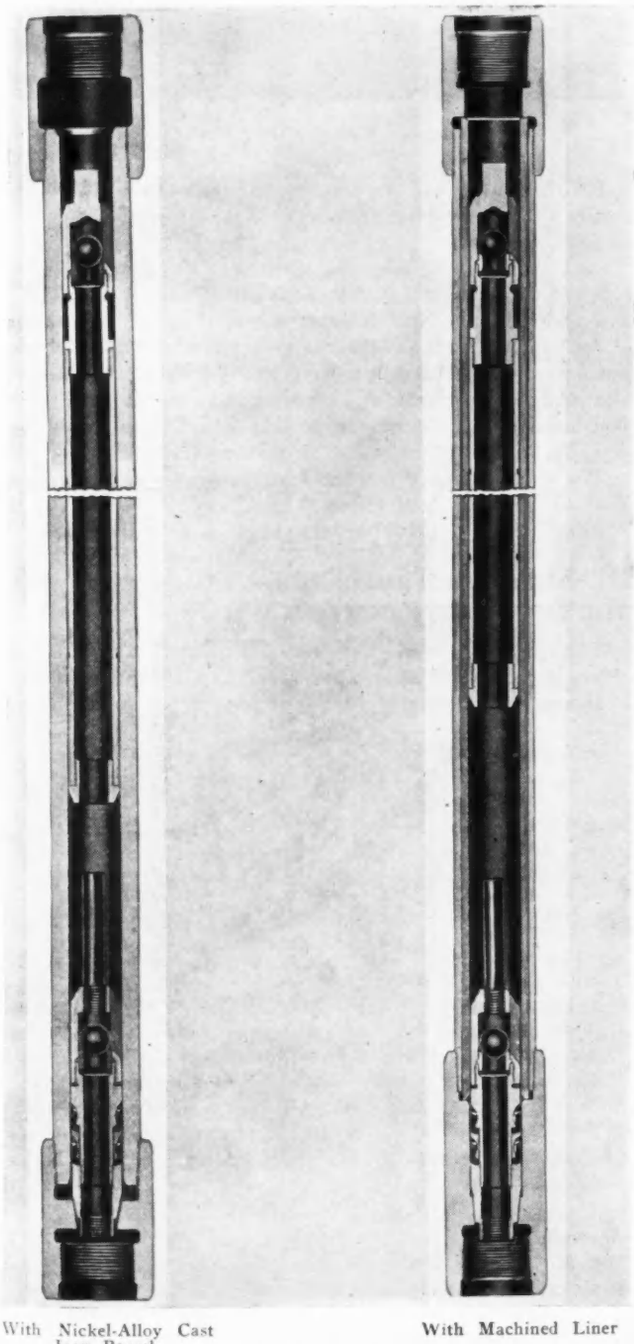
1. Plunger Pumps
OIL WELL SUPPLY COMPANY

Oil Well Supply Company has announced a new line of plunger pumps built in accordance with A.P.I. specifications and featuring accurate bore with honed and polished finish.

The new plunger pumps, designated as "Oilwell" Imperial A.P.I. Type 32, are regularly furnished in two designs—nickel-alloy cast iron barrel design and machined liner design.



With Nickel-Alloy Cast Iron Barrel — With Machined Liner

Oilwell Plunger Pump

Barrels of the first mentioned design are furnished with regular or reinforced ends. Reinforced ends are of larger outside diameter than regular ends, with the reinforced sections extending beyond the threads for a short distance, and are recommended for severe service and where pumping depths exceed 4000 feet.

The nickel-alloy cast iron barrel is cast in one solid piece and annealed to relieve all strains and prevent subsequent warping. The bore is reamed and finally ground and honed on a specially constructed machine.

Couplings for plunger pump with nickel-alloy cast iron barrel are made of malleable iron with standard tubing threads at the tubing ends. The lower coupling has a machined seat for the tapered cup nut of the standing valve.

The barrel of the plunger pump with machined liner consists of a cast and annealed nickel-alloy-iron liner encased in a jacket made of special cold-drawn tubing. Especially long interlocking liner sections are a feature insuring a liner of straight and uniform bore and reducing the number of joints to a minimum. The design of the plunger pump with machined liner provides the advantage of easy replacement of liners in the field without the use of special tools.

Each lines is bored from a solid annealed casting and is given a true and mirror-like finish. Both ends of the liner are cut off square with the axis of the bore and the inside corners are chamfered to facilitate lowering the plunger into the liner. Couplings for the plunger pump with machined liner are machined from cold-rolled steel bar stock.

Plungers for both designs of pumps are made from special cold-drawn tubing and are corrugated, providing a liquid seal which effectively prevents fluid slippage. The plungers are ground and polished to diameters in accordance with A.P.I. fits.

Upper and lower valve cages are machined for close clearence and short lift. The top of each guide is square so that either a ball or a drop can be used in the same cage. The valves are equipped with either the new standardized "Oilwell" A.P.I. balls and seats or the new Type C drops and seats. Type T balls and seats, made of hardened tool steel and especially resistant to abrasion, are regularly furnished but other types can be furnished to suit individual well conditions.

The new plunger pumps are regularly equipped with two-

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THE OIL WEEKLY,
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cup all-steel standing valves with Oberly type cup nuts. Each cup nut has a full taper without wrench flats or other relief. Cup rings fit closely to the body and provide a flat surface for seating each cup and a short beveled outside edge for support. The new "Oilwell" A.P.I. oversize standing valve, designed to reduce fluid restriction, can be used instead of the two-cup all-steel standing valve if desired.

In addition to the oversize standing valve, several other precision-made accessories are available for the new "Oilwell" Imperial A.P.I. Type 32 Plunger Pumps.

2. Rotary Pipe Cleaner

ADAMS MANUFACTURING & ENGINEERING COMPANY

Adams Manufacturing & Engineering Company, 2068 Belgrave Avenue, Huntington Park, California, announces an electrically driven machine for removing corrosion and foreign matter from pipe.

This machine is designed for both new and old pipe and will remove all dirt, rust and scale in preparation for treating either above ground or in the trench without disturbing the service, according to the manufacturer.

It includes a motor driven by a gasoline engine generator. The motor is mounted directly above the rotating cleaning machine and is an integral part of it. The rotary frame opens on hinges and is readily placed on the pipe where it is closed and locked. The machine itself is light and rests on two convex rollers that conform to the perimeter of the pipe; as the pipe is cleaned it is moved back and forth along its length until even the pit holes of old pipe are thoroughly cleaned out. The rotating elements are connected with the motor by a V-shaped belt and a control on the motor permits a reversal of the direction in which these elements revolve around the pipe.

Adams Rotary Pipe Cleaner

The generator and the engine are built in a two-wheel trailer that also carries the cleaning machine when it is not in service.

For old pipe, the cleaning elements are chains on both sides of which are pointed studs made of hard metal. When the studs on one side become worn, they are sharpened; and when further worn the chains are reversed. When both sides are worn, the points are renewed by any welder on the job. For new pipe, the cleaning elements are steel wire brushes made up in segments that are also renewable on the job.

The standard sized machines are made for any pipe from four to 16 inches in diameter.

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HOWARD SMITH COMPANY

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3. Stainless Tape Rule

THE LUFKIN RULE COMPANY

The Lufkin Rule Company, Saginaw, Michigan, announces an "All Stainless Crescent", No. S-696 tape rule.

In this new flexible-rigid, 6-foot Tape-Rule, stainless steel

Lufkin Stainless Steel Tape

is used, not only for the graduated blade and its sliding hook, but also for the case. This makes the article rustproof and non-corrosive. It is offered marked inches to sixteenths, for general use, and for engineers use there is No. S-696-D, which is graduated upper edge in feet, tenths and one-hundredths of feet, lower edge in feet, inches and sixteenths.

Wrenches

J. H. Williams & Co., Buffalo, New York, announces availability of a complete set of current loose leaf catalog pages in which list price revisions are shown on the "Supersocket" line and on the water pump patterns of "Superrenches," both single and double head.

NEWS *from the* *Industry's* EQUIPMENT MAKERS

International Nickel Announces Changes

The International Nickel Company, Incorporated, announces the following changes:

O. B. J. Fraser, formerly in charge of the company's research laboratory at Bayonne, N. J., is located in the development and research department at main offices in New York, where he will be in charge of developments in the uses of nickel and nickel alloys in the oil, gas and coke industries.

Norman B. Pilling, formerly in charge of metallurgical research, has been placed in charge of the research laboratory. E. M. Wise, whose work heretofore has been largely associated with precious metals, has been appointed Mr. Pilling's assistant.

Cutlip Representing Union Wire Rope

Union Wire Rope Corporation announces that Herbert R. Cutlip has been appointed as Texas representative for Union Wire Lines. His headquarters will be in Dallas. Mr. Cutlip has had many years experience in the oil field equipment business. He was formerly with Fenwick-Reddaway of Newark, New Jersey, and also at one time with Crotty & Company, cable tool manufacturers.

HERBERT R. CUTLIP

Hepler New President Hope Engineering

Hope Engineering Company, Mt. Vernon, Ohio, has elected Byron E. Hepler president. He succeeds Raymond S. Lord, who died recently after an appendicitis operation.

Mr. Hepler has been with the company for many years and was vice president and treasurer until his election to the presidency. He is well known in financial circles and throughout the gas industry. He has directed the operation of the company in the organization and construction of many of the nation's larger natural gas projects for the past several years.

Mr. Hepler is also president and director of Rio Grande Valley Gas Company and General Funding Corporation. He is vice president and director of Northwest Stellarene Company, Inc., and a director of Kelly-Springfield Tire Company.

Houston Warehouse Stock Relocated

Petroleum Equipment Company and Oil Field Engineering Corporation, Fort Worth, have moved the Houston warehouse and offices to 3205 Harrisburg Boulevard, Houston, in charge of Tom Jackson, South Texas and Gulf Coast representative.

Eibell Leaves Worthington Organization

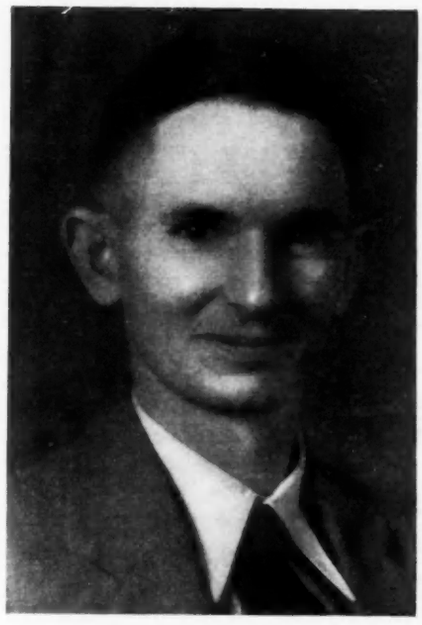
F. C. Eibell, who for the past four years has been manager of the advertising and publicity department of the Worthington Pump and Machinery Corporation, New York, New York, has resigned. His work during the past four years marked Worthington as one of the outsanding industrial advertising accounts. No announcement has been made concerning his future plans.

Oster Celebrates Fortieth Anniversary

January marked the fortieth anniversary of the founding of The Oster Manufacturing Company, of Cleveland, Ohio, manufacturers of pipe and bolt threading equipment, and the third of its merger with the Williams Tool Corporation of Erie, Pennsylvania.

Germany Covering More Territory for Inferno

The Inferno Company, Shreveport, Louisiana, announces enlargement of the territory of B. M. Germany to include Northeast Texas, South Arkansas, and North and East Louisiana. Mr. Germany formerly was sales representative of the company in the East Texas field.



B. M. GERMANY

Larkin Packer Opens at Houston

Larkin Packer Company has opened a warehouse at 1701 Commerce Street, Houston, Texas, in charge of John Dailey. Ed Morrow has been moved into Houston as a salesman for the Larkin Packer Company in this territory.

The Black & Decker Manufacturing Company announces appointment of Robert D. Black as sales manager.

Wilcox Making Survey for Line from Oklahoma City

Tulsa.--H. F. Wilcox Oil & Gas Company is making aerial survey for a proposed eight-inch welded oil line from Oklahoma City to the company's refinery at Bristow, Oklahoma, a distance of approximately 80 miles. It was said that the line depended largely on elimination of discriminatory clauses in impending oil and gas bill now before the legislature.

Phillips Petroleum Company was stringing pipe and ditching for its eight-inch oil line from Oklahoma City to Thrall, Kansas, a distance of approximately 210 miles. Kelly-Dempsey Company of Tulsa has contract on the line.

Squeaks *from the* BULL WHEEL

Discussing the depression and lack of money in circulation while I. B. Benson, Yuba City (California) barber, was shaving him, William Eager expressed a keen desire to sell an old car for some real money, small though the amount might be.

"How would you like to trade your old bus for a year's shaves?" Barber Benson asked.

"Okay," agreed Eager, and the deal was made.

Waiting for his turn, sat Alfred Brown, a painter. "I'll paint your car for $9 worth of shaves and hair cuts," he offered Benson, and was accepted.

There are ways of getting along without money.

Hubby—Why are you crying, dear?

Wife—Cook has left, and poor mother has all the work to do.—London Answers.

"He married Sylvia because she's different from all the other women he knows."

"Different! How?"

"She's the only one who would have him."

"Your Honor, I was not intoxicated."

"But this officer says you were trying to climb a lamp post."

"I was, your honor. A couple of crocodiles had been following me around, and I don't mind telling you they were getting on my nerves."

Father: How many miles to a gallon?

Mother: What color is the upholstery?

Son: How fast will she go?

Daughter: Has it a cigaret lighter?

Neighbors: How can they afford it?

Jones (purchasing a new overcoat): But I can't wear this. It's three sizes too big.

Mrs. Jones: Remember, dear, it has to go over the radiator of the car in cold weather. That's what we have to consider first.

Judge, severely to prisoner: "Now, tell me, why did you steal that purse?"

Prisoner: "Yer honor, I won't deceive you. I was not feeling well, and I thought the change might do me good."

Mrs. Thompson (learning to drive): Henry, that little mirror up there isn't set right.

Thompson: Isn't it?

Mrs. Thompson: No, I can't see anything but the car behind.

Three six-year-old boys fell to reminiscing one day and wondered what one change each would wish should they have their lives to live over.

"I'd never practice slipping out of the yard," the first one mused, "as they got me a lot of spankings."

"And I'd wish to never have to take castor oil," the second one concluded.

"If I could get one change in the old life," the third one said, "I'd ask to be a bottle baby. I got mighty tired of those cigaret ashes dropping in my eyes!"

Judge: What is the charge, officer?

Officer: Driving while in a state of extreme infatuation.

The teacher was drilling her class in the principles of subtraction. "Now, if you subtract 25 from 37, what's the difference?"

"Yeah, that's what I say," answered one of her pupils. "I think it's the bunk, too."

Man in elevator: "Fourth floor, please."

Operator: "Here you are, son."

"How dare you call me son? You're not my father."

"Well, I brought you up, didn't I?"

"What game of bridge does your wife play?"

"Judging from the cost I think it must be toll bridge."

A tourist was enjoying the wonders of California as pointed out by a native.

"What a beautiful grapefruit!" he said, as they passed through a grove of citrus trees.

"Oh, those lemons are a bit small, owing to a comparatively bad season," explained the Californian.

"And what are those enormous blossoms?" asked the tourist.

"Just a patch of dandelions," said the Californian. Presently they reached the Sacramento river.

"Ah," said the tourist, grasping the idea, "somebody's radiator must be leaking."

"Hullo, old man! How you've changed! What's making you look so old?"

"Trying to keep young," was the reply.

"Trying to keep young?"

"Yes—nine of them," was the gloomy response.

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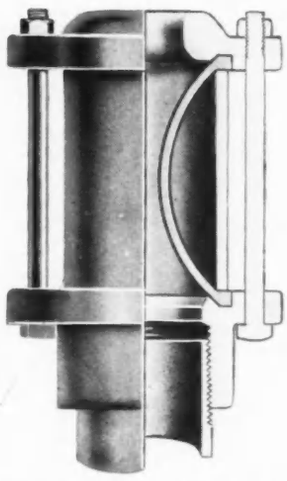
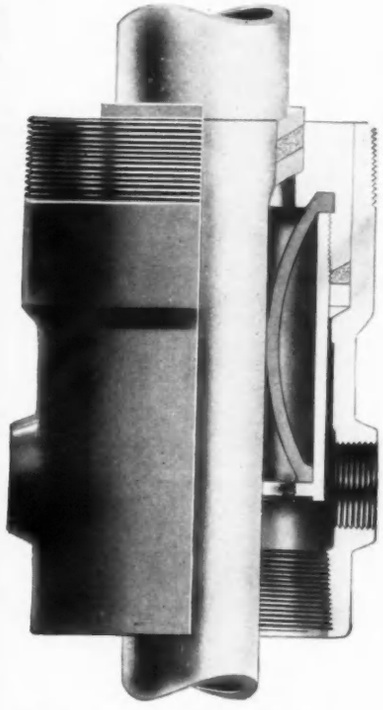


SUCCOR ROD OIL SAVER

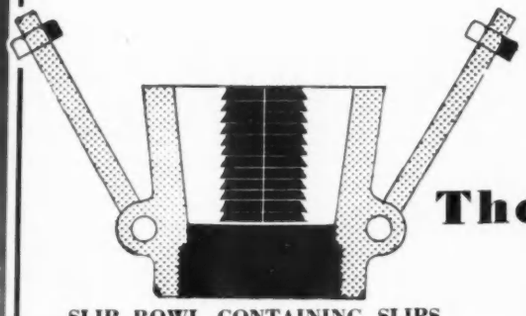
These Products will Save Oil . . . for you

Save your oil by placing the Brewster Succor-rod Oil Saver on the tubing and the Brewster Oil Saver Tubing-head on the casing. This combination wipes the oil from the rod and serves as a packer to prevent the escape of oil and gas. The material used in these two Brewster products is high grade Chrome Nickel Steel, manufactured in Brewster's own Electric Furnace.

For more economy in production install the Brewster hook-up for flowing wells. This typical flow-line hook-up is an important control system. By using only two master valves the Flow-Bean or control valve functions as a complete shut-off—an exclusive feature in the design of the control-head to conserve the gas. By having the gas entirely cased off between the casing and the tubing no gas comes thru the flow-line, thus causing a longer flow of the well and more production.



OIL SAVER TUBING HEAD



SLIP BOWL CONTAINING SLIPS

These slip bowls are used with slips for any sized tubing, providing a full opening to pass the tubing catcher through or for drilling. Remember they are made of Chrome Nickel Steel as are all other Brewster products.

The BREWSTER COMPANY, INC.

SHREVEPORT, LOUISIANA

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